



Asia-Oceania Federation of Organizations for Medical Physics

# AFOMP Newsletter

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Prof. Hasin A. Azhari

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## Editorial

### Grant Challenges of Medical Physics in Asia-Oceania Region: A Call to Action



**Dear Readers,**

Wish You All A Happy and Prosperous New Year 2022!

We are pleased to welcome you to read the latest issue of AFOMP Newsletter January 2022. This issue presents with lots of information about the Executive Committee of AFOMP activities including messages from AFOMP officials, highlights of recently held AOCMP2021 congress, IDMP2021 celebration, scientific invited articles, AFOMP awards & honors, announcements, advertisements, book review in the field of Medical Physics.

Over the last 20 years, the development of medical physics in the asia-oceania region has been witnessed with numerous and significant scientific and professional activities towards the improvement of the status of Medical Physics. However, in order to further improve the status of Medical Physics in the region, the strategic action plans on the educational, professional and scientific issues and challenges are paramount important for better future needs and generations.

In developed countries, the medical physics federations of organization such as AAPM have formed the working group on the grant challenges and addressing on various scientific issues such (i) digital breast tomosynthesis lesion detection challenge (ii) deep-learning for inverse problems-CT reconstruction challenges (iii)The markerless lung target tracking challenge (iv) knowledge-based planning challenges (v) MRI auto-contouring challenges (vi) CT ventilation imaging evaluation (vii) development of quantitative multi-parametric magnetic resonance imaging (MRI) biomarkers for the determination of gleason grade group in prostate cancer (viii) low-dose CT challenge to name a few. Similarly, the ESTRO-Physics community have conducted workshop and prioritised the grant challenges such as (i) definition of clinical target volume from art to science (ii) development and adaptation of artificial intelligence in radiation oncology (iii) modelling the biological effects in the era of precision radiation oncology (iv) visionary leadership. Therefore, AFOMP is being the third largest federations of organization in global medical physics, it is necessary to formulate the grant challenges and to make the strategic action plan to overcome the same.

As Asia-Oceania region has a diverse cultural and economic conditions having low-middle income countries, the prioritization should be on the development the basic infrastructure and resources and also in harmonizing, standardizing, contextualizing of educational and professional challenges such as (i) human resource development and capacity building (ii) development of research agenda and consortia (iii) establishment of independent department (iv) collaboration and support between academia and industry (v) data sharing and management and (vi) development of mentoring and leadership skills. In my opinion, seeking the solutions on the above six areas will result in further strengthening of the medical physics status in the asia-oceania region and therefore it is a call to action on existing and emerging challenges facing by AFOMP regional members.

We, the editorial board, would like to thank to the conference organizers and authors for the reports and scientific articles and book review. Hope you will enjoy in reading this issue and welcome for your valuable comments and feedback.

"In the middle of difficulty lies opportunity" - Albert Einstein

Thanking you

Sincere Regards

Dr. V. Subramani

Editor, AFOMP Newsletter

## From the desk of President AFOMP

“Live as if you were to die tomorrow  
Learn as if you were to live forever.” - Mahatma Gandhi



**Dear AFOMP members,**

With these words, a very warm seasons greeting to all of you. This whole year was quite challenging in terms of usual way of working, educating, and living itself. I am happy to inform you that AFOMP have taken this challenge head over heels with best of educational activities, rewarding experiences and enlightening atmosphere in whole new way. We have started AFOMP monthly webinar series in June 2020 with small team and to our surprise it was very successful. Till date we have organized 19 monthly webinars which have included subject experts, moderators, and participants all around the world. In this monthly webinar series, a wide spectrum of subject areas were included. Due to huge demand and popularity of this series we started another monthly series of AFOMP Schools webinar of 2- 3 hours. So far, we have organized six quite successful AFOMP Schools webinars. The difficult time of pandemic have made us learn the new ways of functioning. During this difficult time also, AFOMP was quite active in terms of establishing new ways to celebrate the medical physics and encourage the young students. AFOMP has started various awards to recognize the contributions of young medical physicists and students which include **C.V Saraswathi-A.N Parameswaran AFOMP Best PhD award, P.N Krishnamoorthy Memorial AFOMP young achiever award, Prof. Sung Sil Chu's AFOMP best student publication award**. This gives us a perfect opportunity to encourage the good work of medical physics community and reward them. With these efforts we are trying our best to stimulate the educational and research activities. I am very happy that despite of very difficult situation, organizers of AOCMP2021 have very successfully organized the AOCMP in hybrid mode at Dhaka, Bangladesh during 10– 12 December 2021.

Heartiest congratulations to Prof. Hasin Anupama Azhari and her entire team for the relentless hard work in making this event a grand success. I would also like to call upon all the national member organizations (NMO's) to come forward and take this opportunity to improve visibility of medical physicist and medical physics in their respective countries. Please inform us about your activities, we will try to publicize it on AFOMP website. I wish and hope that the pandemic will over and world will normal as before. Looking forward for your active participations in all AFOMP activities and look forward to having you in person for the AOCMP2022 at Taipei, Taiwan during 10– 12 December 2022.

The conference website [www.http://www.aocmp2022.com](http://www.aocmp2022.com) is launched. Visit for updated information. Further the World Congress on Medical Physics and Biomedical Engineering is being held in Singapore during 12– 17 June 2022 [ [www.https://wc2022.org](https://wc2022.org) ]

At last, I hope we all will take lead to celebrate and explore the new dimensions to our profession.

*Wishing you all very fruitful and healthy 2022*

**Prof. Arun Chougule**  
**President, AFOMP**

## AFOMP Vice-President's Message



Dear Colleagues,  
it has been a busy year, trying to perform our work at the best possible standard, despite the complexities and barriers that the pandemic has presented us with.

A manuscript (prepared by IOMP/IFMBE women) based on the response analysis of the worldwide survey conducted in 2020 on the effects of the pandemic on MP and BME professions has been submitted for publication and is focused on the biggest challenges during lockdowns. For example, participants reported challenges within the immediate family to include responsibilities for school, childcare, and children's wellbeing, and the loss of social interactions with family and friends. Participants also reported increased domestic duties, blurred lines between home and work, and long workdays. Finding adequate workspace was a problem, and adaptations were necessary, especially when adults shared the same setting for working as children. Connectivity issues and concentration difficulties also emerged. More detailed results of the survey will be presented at Wc2022.

On a positive note, the AFOMP region will be a host of the highest international medical physics meetings in the coming years, starting with the IUPESM World Congress 2022 held in June 2022 in Singapore. In late 2023, the International Conference on Medical Physics (ICMP) will be held in Mumbai India. Memorandum of understanding has been achieved and signed off by IOMP, AMPI, AFOMP and SEAFOMP. And then in 2025, the next IUPESM World Congress will be held in Adelaide, Australia – and this is not to overshadow our own AOCMP 2022 that will be held in Taipei in December 2022. It is a testament to dedication and excellent work that our regional members were successful in securing these meetings and, fingers crossed, that we will be able to travel and meet face-to-face.

I also have the honour to chair the AHC committee, whose members are Kanchan Adhikari (Nepal), Noriah Jamal (Malaysia), Freddy Haryanto (Indonesia), Hidetoshi Saitoh (Japan), Youngyih Han (South Korea). New awards have been established due to tireless work of our president Prof Chougule and generous donations of several donors. The AHC worked very hard evaluating nominations received for various AFOMP awards in 2021:

1. **Prof Kiyonari Inamura Memorial AFOMP Oration** – 1 nomination was received. The 2021 Orator is Prof Tae Suk, Professor and Director of Biomedical Engineering from the Catholic University Medical College, Korea for his extensive service to AFOMP and medical physics community globally. The Prof. Kiyonari Inamura Memorial AFOMP Oration Award was presented at the AOCMP 2021 conference.

2. **Lifetime achievement award**: 3 nominations were received for the AFOMP Lifetime Achievement Award (China, Indonesia and Japan). The AFOMP lifetime achievement award is presented to Prof Masahiro Endo from Japan, Executive Director of the Association for Nuclear Technology in Medicine, Japan for considerable contribution to medical physics profession and research in Japan and the AFOMP region.

3. **AFOMP Journal Prize for the Best Paper published in an AFOMP Journal** (Radiological Physics and Technology, Physical and Engineering Sciences in Medicine and Journal of Medical Physics) authored by an AFOMP member: 9 nominations were received (compared to 21 in 2020). The winner is Dr Ieko from

Tohoku University and Yamagata University, Japan for his paper titled: The impact of 4DCT-ventilation imaging-guided proton therapy on stereotactic body radiotherapy for lung cancer, RPT (2020); vol.13:230–237. (Evaluated by the AFOMP Science Committee.)

4. **PN Krishnamurthy Memorial AFOMP Young achiever award:**7nominations have been received.The winner is DrYing Song, West China Hospital, Sichuan, China who performed exceptionally, including contribution toward development of medical physics education and training at her institution and in China.

5. **The C.V. Saraswathi -A.N. Parameswaran Memorial AFOMP best PhD:** 8 nominations were received. The best Ph.D. awardee is Dr Wonjoong Cheon from Proton Therapy Center, National Cancer Center, Gyeonggi-do, Republic of Korea; for thesis titled: Development of mechanical and dosimetric quality assurance system using cameras with artificial neural networks.

6. **The Professor Sung Sil Chu AFOMP Best Student's Publication Award** for a student from a low- or lower-middle-income country received 2 nominations. The awardee is Ms Athiyaman Hemalatha, Department of Radiological Physics, SMS Medical College, Jaipur, India, for her paper Out-Of-Field Dose Measurement and Second Cancer-Risk Estimation Following External Beam Radiotherapy and Brachytherapy for Cervical Cancer Treatment: A Phantom Study, published in Iran J Med Phys 2020; 17: 253-259. 10.22038/ijmp.2019.38166.1491.

7. **AOCMP2022 travel awards** were not awarded this year due to COVID travel restrictions. Instead the EXCOM decided to provide an online registration fee of US\$ 25to 30 delegates to participate in AOCMP 2021.

I would like to thank all our members for their contribution towards AFOMP activities and it has been my pleasure to work with many of you. Wishing you a very happy, safe and healthy New Year 2022.

Eva Bezak  
Vice President, AFOMP.

## AFOMP Secretary General's Message



Dear Members,

AFOMP newsletter is brought out half yearly in January and June of every year. Medical physics science and research related articles, reports, educational material, scientific activities, workshop & conference related information are published in AFOMP newsletter. I appreciated the full dedication and support of the newsletter editorial board and the members.

Asia-Oceania has a diverse cultural, social, educational, and economical background. In Asia-Oceania the number of cancer patients is very high and there are almost no accomplished Medical Physicists to treat these vast numbers of patients. AFOMP has been working intimately with Asia-Oceania regional members and many organizations such as IOMP, IAEA, WHO in to address the problems of cancer patients and also to create skilled Medical Physicists. We hope together we can lead emerging challenges in quality and safety of radiotherapy. The role and status of medical physicists in the AFOMP region has gradually improved as can be seen by its increasing recognition in societies.

The COVID-19 pandemic has had an impact on all of AFOMP's activities. All cultures and organizations around the world are attempting to navigate their way through this crisis by balancing immediate needs with long-term goals. Despite the pandemic, online activities such as monthly webinars, AFOMP school, IDMP, and IMPW webinars have been successful, and they have had a significant impact on the AFOMP community in terms of knowledge growth. Parallel to this, AFOMP is working hard to develop a postgraduate MP course syllabus that will serve as a basic level for all countries to achieve and a desirable level for countries with suitable training pathways for medical physicists.

The most important event is AFOMP yearly official Congress AOCMP 2021. We have tried our best to give you a good congress environment to exchange views and share experiences with high level professors, colleagues and friends, representing many well-known Universities and Research Institutes together with members of relevant international organizations. Six keynote speeches from the IAEA, IOMP, AFOMP, EFOMP, MEFOMP, and DGMP, as well as 22 invited lectures from well-known professionals, have been enlightened our scientific program. There are also five Mini-Symposia with a series of panel discussions on various topics. Many excellent oral and poster sessions would have been presented by a broad group of physicists, researchers, students, and others. Following the AOCMP congress IMPCB examination was held successfully. I would like to thank all those who have helped us in various ways to successfully organize the conference.

I'm looking forward to interacting with members of different MP organizations and to bring their ideas and concerns on the issues which we care most both as professional medical physics and patrons of health care.

I would like to express my warmest thank to all the persons who contributed writing the wonderful and inspiring articles, and the local board members for their everlasting support throughout the creation of this edition with tireless efforts exerted by our predecessors to take AFOMP to the height of the vibrant organization and regional leader in the development of medical physics in the Asia-Pacific region.

Wish all of you Merry Christmas and Happy New Year 2022 .May 2022 be a stepping-stone to a sustainable and inclusive new world and prove to be a joyful, prosperous, and productive year for you all.

Prof. Dr. Hasin Anupama Azhari

General Secretary

Asia–Oceania Federation of Organization for Medical Physics (AFOMP).

# 21st Asia Oceania Congress of Medical Physics (AOCMP-2021) Report

Jobairul Islam, M Akhtaruzzaman /Dhaka, Bangladesh

## AOCMP-2021, Dhaka, Bangladesh

The 21st Asia Oceania Congress of Medical Physics (AOCMP-2021) hosted by the Bangladesh Medical Physics Society (BMPS) at the United International University (UIU), Dhaka, Bangladesh from 10-12 December 2021. The co-organizers were Bangladesh Atomic Energy Commission (BAEC), National Institute of Cancer Research and Hospital (NICRH), United International University (UIU) and South Asia Centre for Medical Physics and Cancer Research (SCMPCR). The congress was endorsed by the International Organization for Medical Physics (IOMP), Middle East Federation of Medical Physics (MEFOMP) and European Federation of Organizations for Medical Physics (EFOMP). This was the first time the AFOMP congress held in Bangladesh.

This International conference provided a perfect forum to fulfil the objective, foster knowledge up gradation and encourage exchange of ideas. The comprehensive scientific programme divided into Kiyonari Inamura Oration Lecture, plenary session, scientific session, special ceremony, sponsor presentation, mini symposium session, poster session, award ceremony and valedictory session. A total of 360 participants were in attendance from 28 different countries in Asia-Oceania, Europe, Middle East and the US.

Many companies had exhibition stands at AOCMP-2021, thus allowing the participants to see the latest development in the medical physics related industry. The sponsors and exhibitors at AOCMP-2021 were: Varian, Team Best, SiemensHealthcares, Elekta, PTW, United International University (UIU), Labaid Cancer Hospital and Super Speciality Center, Oregon, Vision RT, LAP, RTI, ZEISS, PICO. We express sincere gratitude to all sponsors and exhibitors.



Fig: Virtual Platform, AOCMP-2021

## At a Glance: AOCMP-2021

<b>Key Note Speakers - 6</b> (IAEA, IOMP, AFOMP, EFOMP, MEFOMP, DFMP)	<b>Invited Speakers -26</b> Asia-Oceania, Europe, Middle East and the USA.	<b>Oral Presenters - 92</b> Asia-Oceania, Europe, Middle East, Africa and the USA.	<b>Mini Symposium -05</b> (IMPCB, AFOMP, EFOMP, COVID-19, Women for Women,
<b>E-Poster - 64</b>	<b>Sponsor Presentations - 06</b>	<b>Kiyonari Inamura Oration Lecture</b>	<b>Chair, Co-Chair - 26</b>

## SPECIAL CEREMONY

**Mr. Ziaul Hasan**, ndc (Chief Guest), Secretary, Ministry of Science and Technology, People's Republic of Bangladesh; **Professor Dr. Sanowar Hossain** (Special Guest), Chairman, Bangladesh Atomic Energy Commission (BAEC); **Professor Dr. A. K. H. Enayet Hussain** (Special Guest), Director General, Medical Education, Ministry of Health and Family Welfare, People's Republic of Bangladesh; **Dr. Kazi Anowarul Hoque** (Special Guest), Additional Secretary (PRL), Local Government Division, Ministry of Local Government, Rural Development & Cooperatives, Bangladesh; **Prof. Dr. M Iqbal Arslan** (Special Guest), President, Swadhinata Chikitschak Parishad (SWACHIP); **Prof. Dr. Chowdhury Mofizur Rahman (Patron)**, Vice-Chancellor, United International University; **Mr. Anwarul Islam**, President, BMPS; **Prof. Dr. Hasin Anupama Azhari**, Organizing Chairperson, AOCMP-2021; **Prof. Dr. Arun Chougule (India)**, President, AFOMP; **Prof. Dr. Eva Bezak (Australia)**, Vice President, AFOMP.

The session presided over **Professor Dr. Golam Abu Zakaria**, Patron, Organizing Committee, AOCMP-2021.

They delivered valuable speeches on medical physics, sharing experiences with scientists and helping the medical physics community by collaborative work.



Fig: Special Ceremony, AOCMP-2021

## SCIENTIFIC SESSION

Kiyonari Inamura Oration Lecture, Keynote Lectures (6), Invited Lectures (26), sponsor presentations (06), Mini Symposium (5), Oral (92) and e-poster presentations (64) in different area such as radiation oncology, radiation protection, treatment planning system, dosimetry, brachytherapy, radiology, molecular imaging, nuclear medicine, imaging, and advanced biomedical engineering were presented by local and foreign presenters during this program.



**VENDOR PRESENTATION:**

Six vendors presented their paper on modern and updated technology of medical physics from Varian Medical Systems, Team Best, Elekta, PTW, Carl Zeiss, LAP.



**AWARD CEREMONY:**

Judges selected three best papers on radiotherapy session, radiology and imaging session based on the evaluation criteria out of 92 oral presentations. Also, selected three best papers on radiotherapy, radiology and imaging, nuclear medicine based on the evaluation criteria out of 64 e posters.

**AFOMP Award**

Best Paper Award	Yoshiro Ieko (Japan)
C. V. Saraswathi – A.N. Parameswaran Memorial AFOMP Best PhD Award	Wonjoong Cheon (Korea)
Young Achiever Award	Ying Song (China)
Prof. Sung Sil Chu's AFOMP Best Student Publication Award	Hemalatha Athiyaman (India)

**AOCMP-2021: Best Oral Presenters Name**

Position	Radiotherapy	Radiology and Imaging
1 <sup>st</sup>	<p><b>Mohammad Amin Mosleh -Shirazi</b>                      “Influence of Post-synthesis and Post-irradiation Times on Dosimetric Properties of a VIPET -type Gel Dosimeter”</p>	<p><b>SusmitaAfroz</b>                      “Cluster Size Analyses of ALPIDE -CMOS Pixel Sensor for pCT”</p>
2 <sup>nd</sup>	<p><b>Abdul Sattar Khalid</b>                      “A Retrospective Study on The Dosimetric Effect of Not Applying A Shift in Varian Ring Applicators For HDR Cervix Brachytherapy Treatments”</p>	<p><b>Kuratani Yosuke</b>                      “Translation from Non-Contrast to Contrast Images by Cycle -GAN in Head -Neck Vascular CT Imaging”</p>
3 <sup>rd</sup>	<p><b>Miriam Eckl</b>                      “Dosimetric Benefits of Daily Treatment Plan Adaptation for Prostate Cancer Stereotactic Body Radiotherapy Based on Synthetic Cone-Beam CT”</p> <p><b>NurAsilahJalalludin</b>                      “Photon Beam Commissioning of Elekta Versa HD Linear Accelerator: A Multi - Institutional Study”</p>	<p><b>Katsumi Tsujioka</b>                      “Image quality evaluation on-center and off-center FOV of CT (Spatial resolution and motion artifacts)”</p>

## Best Poster Award

Position	Radiotherapy	Radiology & Imaging	Nuclear Medicine
1 <sup>st</sup>	<b>KalyanMondal</b> “Plan Quality Score To Evaluate The Impact Of Dtdc On Ipsa Optimized Treatment Plans Of Mupit Based Interstitial Brachytherapy In Cervical Cancer”	<b>UrshellaHishaam</b> “Optimizing Image Noise as a means to Improve Computed Tomography ATCM in Sri Lanka”	<b>Dr. Chai Hong Yeong</b> “Medical Imaging Capabilities of Neutron-Activated Samarium-153 Polystyrene Microspheres As A Theranostics Agent After Direct Intra-Tumoural Injection On Sprague-Dawley Rats With Xeno transplanted Liver Tumours”
2 <sup>nd</sup>	<b>Cheung Ho Yin Anson</b> “Dosimetric Evaluation of Helical Tomotherapy (HT) versus Volumetric Arc Therapy (VMAT) in Patients with Liver Radiotherapy Treatment”	<b>Dr. BijanHashemi</b> “Assessment of Abdomen-Pelvis CT Protocols Based on Doses for Various Patient Sizes using Anthropomorphic (XCAT) Phantoms and Monte Carlo Simulation”	<b>Cheung Ho Yin Anson</b> “Respiratory gated (4D)FDG -PET/CT scan for liver malignancies: Feasibility in liver cancer patient and tumour quantitative analysis”
3 <sup>rd</sup>	<b>Sathiyaraj</b> “Validation of non-coplanar dosimetry of SRS/SRT using Octavius 4d dosimetry system”	<b>Akyea-Larbi Kofi Okyere</b> “Benchmarking of New Automatic CT Radiation Dose Calculator”	<b>Shinji Kawamura</b> “Study on the evaluation method of 125I source strength inserted in a sterilized cartridge”

### MODE OF CONGRESS:

The congress had been done virtually. The presenters had been delivered their speech over the recording and in live. Chair and Co-Chair conducted the sessions. The presenters were also present in each and every session for question-and-answer session.

### CLOSING CEREMONY

AFOMP President, Vice-President, Secretary General and Organizing Secretary shared their experiences about the arrangement of this international program for the inspiring young generation.



Fig: Closing Ceremony, AOCMP-2021

### ACKNOWLEDGEMENT

We are thankful to all of our BMPS members, local and foreign participants, colleagues, contributors, organizing committee members, co-organizers, sponsors, scientists, researchers, students, and all others for their support of the AOCMP-2021. Specially, we are very thankful to Design Accent team who had supported our virtual platform of AOCMP-2021.

## AFOMP Monthly Webinars: A solid platform for learning and knowledge sharing

Prof Arun Chougule and Dr. Mary Joan

The pandemic COVID-19 struck the world in December 2019 bringing in a complete change in all aspects of daily life. Academics, research, education, and professional development were too affected. Technological advances came in handy at these challenging times bringing in effective solutions to many dilemmas. Virtual/ online classes, seminars, workshops, and conferences became the new norm.

The Asia-Oceania Federation of Organizations for Medical Physics (AFOMP) was at its 20th year of inception (May 2020-May 2021). Completing two decades in improving, escalating, and harmonizing the medical physics education and profession in the whole of Asia-Oceania is a major milestone to be left unsung even in a pandemic. Raising to the occasion, the AFOMP executive council under the guidance and leadership of President came up with a yearlong monthly webinar series to celebrate the 20th anniversary. International Organization for Medical Physics (IOMP) launched the International Medical Physics Week (IMPW) celebrations in 2020, and the first announcement about the AFOMP monthly webinar series were made by the President AFOMP during the AFOMP's IMPW 2020 virtual celebrations. The monthly webinar series started on 5th June 2020 were a huge success and continued to be extremely popular all throughout the 20th anniversary year. The increasing popularity and continued demand especially from the budding medical physicists across Asia-Oceania and around the world instigated the monthly webinars to continue beyond anniversary celebrations and today have successfully completed 19 webinars and schedule for January- June 2022 is already on AFOMP website.

The monthly webinars continued to be organized on the first Thursday of each month on topics of wide interests. Adept speakers shared their experience and expertise to a global audience of medical physicists on a virtual platform during these hour-long moderated webinars. The topics, speakers and moderators of the monthly webinars are planned in advance and communicated among all National Member Organizations (NMOs) for circulation along with the guidelines for registration and participation. It is also posted in the AFOMP website to ensure anytime easy access. Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) accredited the monthly webinars with 2 CPD points.



The first webinar of the year 2021 was held on 7th day of January on the topic 'Proton Therapy: Why and How?'. Dr D S Shamurailatpam, the chief medical physicist of the first proton center of India delivered the talk moderated by Dr Mohammad Amin MoslehShirazi from Iran. An expert line of speakers and moderators kept the flow steady throughout the year. The monthly webinar held on 6th May 2021 on the topic Basic Principles, Dose Planning, Advantages and Quality Assurance of a

Gamma Knife Radiosurgery by Prof Hyun-Tai Chung of South Korea and moderated by Dr Supriyanto Ardjo Pawiro from Indonesia, the 12th of its kind marked a very grand and impressive conclusion of the 20th anniversary celebrations of AFOMP amidst the pandemic.

AFOMP monthly webinars are unique in its style, content, accessibility, and participation. Virtual participation has its own advantages in addition to the fact that it is a perfect means of knowledge dissemination at this pandemic times. AFOMP made the participation free of cost and students and young medical physicists across the globe embraced it with zeal and passion. The video recording of each webinar was made available in the AFOMP website within the next 48 hours. There were many requests to continue the monthly webinars and many requests for specific topics. The AFOMP committee was ready with the schedule for the next 6 months and the monthly webinars continued without hassles beyond the two decade celebrations. The topics covered, speakers and moderators of the monthly webinars of 2021 are listed below along with the link to the video recordings.



Date	Topic and link to the recording	Speaker	Moderator
7 Jan 2021	Proton Therapy: Why and How? <a href="https://youtu.be/FgWLFgX3cOU">https://youtu.be/FgWLFgX3cOU</a>	Dr Shamurailatpam D S, India	Dr Mohammad Amin Mosleh Shirazi, Iran
11 Feb 2021	IAEA TRS -398 Absorbed Dose Determination in External Beam Radiotherapy	Prof Dr Chen -Shou Chui	Dr V Subramani, India
4 March 2021	An overview of targeted beta and alpha therapies <a href="https://youtu.be/ix2xwwCnsJo">https://youtu.be/ix2xwwCnsJo</a>	Prof Eva Bezak, Australia	Dr Hajime Monzen Japan
1 April 2021	Biological Paradigms Affecting Radiotherapy Outcome <a href="https://youtu.be/IDHALVG1ULA">https://youtu.be/IDHALVG1ULA</a>	Prof Hossein Mozdarani, Iran	Dr M Akhtaruzzaman, Bangladesh
6 May 2021	Basic Principles, Dose Planning, Advantages and Quality Assurance of a Gamma Knife Radiosurgery <a href="https://youtu.be/7xPzYYlefAA">https://youtu.be/7xPzYYlefAA</a>	Prof Hyun-Tai Chung, S Korea	Dr Supriyanto Ardjo Pawiro, Indonesia
3 June 2021	Knowledge-based planning: research and practice for cancer treatment <a href="https://youtube/I2ReGs39FZs">https://youtube/I2ReGs39FZs</a>	Prof Yibao Zhang, China	Dr Mary Joan, India
8 July 2021	The IAEA TCS71: Guidelines for the Certification of Clinically Qualified Medical Physicists	Georgia Loreti, IAEA	Prof Arun Chougule, India
5 Aug 2021	Technological advances in intraoperative radiotherapy	Dr Jin Xiance, China	Dr AikHao Ng, Malaysia
2 Sept 2021	Radiomics and Radiogenomics with AI for Oncology <a href="https://youtu.be/HsNwx4Ako">https://youtu.be/HsNwx4Ako</a>	Prof Arimura Hidetaka, Japan	Prof Hui-Yu Tsai, Taiwan
15 Oct 2021	Image Guided Application in Radiation Therapy <a href="https://youtu.be/ZvFzm80Ozc">https://youtu.be/ZvFzm80Ozc</a>	Prof Tae Suk Suh, S Korea	Prof Michael Lee, Hong Kong
11 Nov 2021	The Augmented Role of the Medical Physicist in Radiation Emergencies <a href="https://youtu.be/yuUyt1GeLuU">https://youtu.be/yuUyt1GeLuU</a>	Prof Brad Cassels, Australia	Dr Mary Joan, India
2 Dec 2021	Monitor Unit Calculation for Photon and Electron Beams	Prof S D Sharma, India	Lam Thi The Nguyen, Vietnam

The monthly webinar schedule for the early half of 2022 was made available by early November 2021. President AFOMP, Prof Arun Chougule, Secretary General AFOMP, Prof Hasin Anupama Azhari, AFOMP Professional Relations Committee Chair, Asso. Prof Chai Hong Yeong, AFOMP Education and Training Committee Chair, Prof Xiance Jin, and all members of the AFOMP executive committee put forth their best efforts to accomplish this second successful year of AFOMP monthly webinars and going forward.



**Asia Oceania Federation of Organizations for Medical Physics**  
**AFOMP 20<sup>th</sup> Anniversary**  
**AFOMP Monthly Webinar Series (January-June) 2022**  
(Every First Thursday of the month, 07.00 – 08.00 AM GMT)

No	Date of Webinar	Speakers	Topics	Moderators
01	07 January 2022	Dr. Pradip Deb	A Radioprotective Apron Design for radiation workers.	Dr. Kiliwof Khamwan
02	13 February 2022	Dr. Sean Geoghegan	Moving from a functional alignment to an anatomical alignment of radiation oncology medical physics services	Dr. V Subramani
03	04 March 2022	Dr. Donald Mclean and Dr. Anne Perkins	Regional clinical training for medical physics in a changing world	Dr. J. Jayasinghthhan
04	01 April 2022	Dr. Simon Downes	APSIG activities for benefit of AFOMP region	Dr. Suresh Poudel
05	06 May 2022	Dr. Joel Poder	Brachytherapy – basics to recent advances	Ms. Jeevanshu Jain
06	03 June 2022	Dr. S Murali Iyengar	Nuclear and Radiological emergencies- Role of Medical Physicist	Dr. Mary Joan

As AFOMP completes one and half years of excellence in conducting monthly webinars, the exuberant enthusiasm and strong support of all medical physicists across the globe especially of the students and young medical physicists of AFOMP region sustained the momentum. The speakers and moderators left no stone unturned to provide and facilitate the best learning experience. The participants were really forthcoming with their active involvement. The contribution of speakers, moderators and participants from all NMOs of AFOMP paved way for understanding and acceptance of each ones strengths and weaknesses. The AFOMP monthly webinars boosted the morale of not only medical physicists of Asia-Oceania, but also other parts of the world at this testing pandemic times leading to an international integration and collaboration of academics, research, and professional development. The dream of eradicating disparities and bringing in harmonization in medical physics education and professional status in the AFOMP seems more realistic against all odds though we have miles to go.

We have to work collectively and effectively to improve knowledge and achieve international best standards. Our commitment to the profession and cooperation will take us to the achievement of the desired goals. These monthly academic webinars shall be a good forum for active discussions and constructive debates to improve ourselves academically, scientifically, and professionally. These one and half years' experience further affirms that these monthly webinars are a solid platform for learning and knowledge sharing.

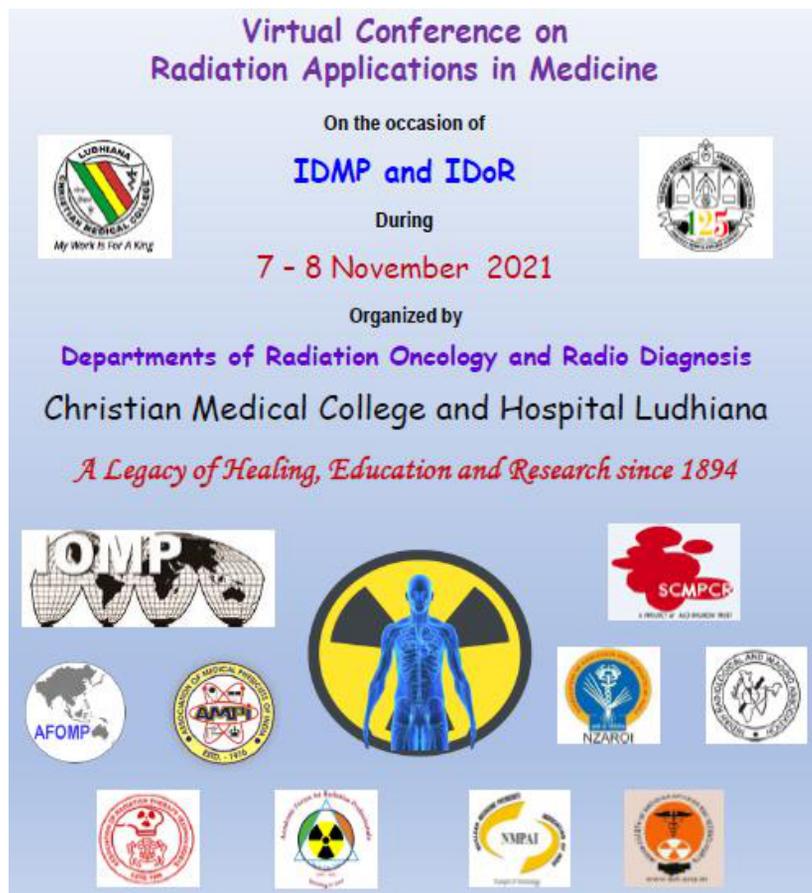
The impact and lessons learned from the first year of AFOMP monthly webinars were analyzed and compiled in <http://mpijournal.org/pdf/2021-01/MPI-2021-01-p015.pdf>

# Virtual Conference on Radiation Applications in Medicine

7-8 November 2021

Dr. Mary Joan, Christian Medical College and Hospital Ludhiana, India

The departments of Radiation Oncology and Radio Diagnosis, Christian Medical College and Hospital Ludhiana, Punjab organised a two-day international virtual scientific programme, Conference on Radiation Applications in Medicine from 7th to 8th November 2021 on the occasion of International Day of Medical Physics (IDMP) and International Day of Radiology (IDoR).



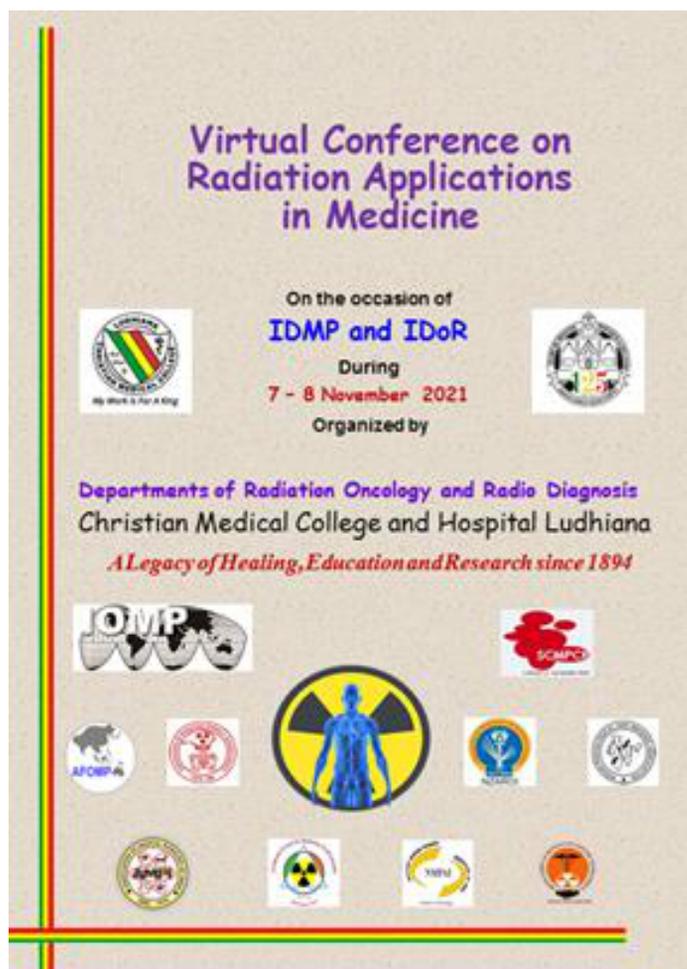
Contribution of Medical Physics in healthcare is multi-dimensional and it has improved the healthcare tremendously. The recent advancements in Medical Physics may it be in Radio diagnosis, Radiotherapy, Nuclear Medicine and various fields specially using ionizing radiation has made monumental sprints. To bring over it and recognize the contribution of Medical Physics to healthcare, International Organization for Medical Physics (IOMP) has started to celebrate 7th November, the birthday of Madam Marie Curie as International Day of Medical Physics (IDMP) since 2013. The main purpose of IDMP celebrations include motivating the organization of activities that result in the promotion of the

subject of medical physics globally, increasing the visibility of the profession and outreach to fellow professionals and general public. Since the 7th day of November 2013, the very first International Day of Medical Physics, where various academic and teaching institutes showcased the contributions of medical physicists to healthcare globally and continues to be celebrated annually thereafter. Discovery of X-rays on 8 November 1895 by German physicist Prof Wilhelm Roentgen has revolutionised the medical diagnosis and treatment. The anniversary of this discovery is celebrated around the world as

IDoR in recognition of the remarkable contributions made by radiological imaging and radiological treatment to health care, and the role of radiation professionals in providing quality care to patients.

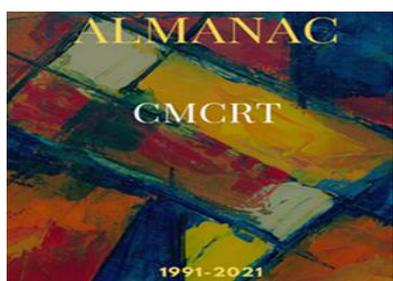
Christian Medical College Ludhiana has been always in the forefront to avail the best diagnostic and treatment facilities to treat patients since 1894. The teaching and training program for radiotherapy technologists in CMC Ludhiana dates to early 1960's and the MD Radiation Oncology program at the institute is completing 30 years. The departments of Radiation Oncology and Radio Diagnosis collectively decided to commemorate the Pearl Jubilee celebrations on the occasion of IDMP and IDoR 2021.

The theme of this year's IDMP celebrations is 'Communicating the Role of Medical Physicists to the Public'. The rapidly evolving applications of physics in medicine and the ongoing pandemic demands new set of skills as well as outlooks to meet the challenges efficiently and successfully. The Departments of Radiation Oncology and Radio Diagnosis, Christian Medical College and Hospital, Ludhiana, India celebrated IDMP with a two-day international scientific programme Virtual Conference on Radiation Applications in Medicine.



Ludhiana, India celebrated IDMP with a two-day international scientific programme Virtual Conference on Radiation Applications in Medicine. The rapidly evolving applications of physics in medicine and the current pandemic demands new set of skills as well as outlooks to meet the challenges efficiently and successfully. This virtual conference offered a forum for sharing invaluable experiences for improving the practice of Medical Physics and an opportunity to listen to a number of great people holding and practicing high ideas in life as well as profession. The scientific programme included talks and teaching sessions by eminent speakers in the field of medical physics. On 7th November 2021, the first day, the conference started with inaugural ceremony. The programme started with a prayer and invocation song. A congenial welcome to the patrons of the conference Dr William Bhatti, Director, CMC & H Ludhiana, Dr Jeyaraj Pandian, Principal CMC Ludhiana, all speakers and participants were proposed by the

Organizing Chairperson Dr Jainet Sachdeva. An introduction to the purpose and objectives of the virtual conference, IDMP and IDoR celebrations were described by the Organizing Secretary Dr Mary Joan. The patrons addressed the virtual gathering and Dr Jeyaraj Pandian, Principal CMCL released the e-Souvenir and Abstract Book of the conference. Greetings and best wishes from the Director and Principal of CMC Ludhiana, office bearers of various endorsing professional associations, Organising committee members and abstracts of all the invited talks, poster and oral presentations, endorsements and advertisements from knowledge and trade partners comprised the eSouvenir. Dr Subhash Singla, Organising Chairman delivered the IDoR message.



The Pearl Jubilee directory of CMC alumnus of Radiation Oncologists and Radiation Therapists were introduced and released by Dr M K Mahajan (Ex Prof and Head) and Mrs Manjinder Dhanoa (Sr Tutor and Technologist) respectively. A vote of thanks was extended by the scientific committee chairperson Dr Pamela Jeyaraj. Dr Preeti Negi and Dr Abraham P Abraham mastered the inaugural ceremony. Following the inauguration, a prerecorded video message on the IDMP celebration from the President IOMP, Prof Madan Rehani and a live message from the President AFOMP, Prof Arun Chougule were conveyed.

Day 1 Time (IST)	Scientific Programme November 7 <sup>th</sup> , 2021 (Sunday)
10.00AM - 10.30AM	Inaugural Ceremony
10.30AM - 10.40AM	Session I: (IDMP Messages from President IOMP, AFOMP)
10:40 AM-12:30 PM	Session II: Dr Jaineet Sachdeva, Dr Kamlesh Patil <b>L-1:</b> Medical Physicists are Indispensable <b>Dr S D Sharma BARC Mumbai</b> <b>L-2:</b> Hadron Therapy <b>Dr Dayananda Sharma Apollo Proton Center Chennai</b> <b>L-3:</b> Radiation ablation for cardiac arrhythmias <b>Dr D N Sharma AIIMS New Delhi</b> <b>L-4:</b> Extracorporeal RT to bone for Osteosarcoma <b>Dr Anwin Kumar RCC Thiruvananthapuram</b> <b>T-1:</b> The Modular software platform for all Patient QA – VERIQA <b>C Narmada PTW Dosimetry India</b>
12.30PM-02.10PM	Session III: Dr Subhash Singla, Dr Pamela Jeyaraj, Dr Roshan Philip <b>L-5:</b> Artificial Intelligence applications in Intensity Modulated Proton therapy <b>Dr Ganapathi K Apollo Proton Center Chennai</b> <b>L-6:</b> Brachytherapy in the era of precision radiotherapy <b>Dr Bhavana Rai, PGI Chandigarh</b> <b>L-7:</b> Shining girls – dark stories <b>Mr Rakesh Kaul Max Superspecialty Hospital New Delhi</b> <b>T-2:</b> Knowledge based planning features in Eclipse TPS <b>Mr Purushothaman K Varian Medical System:</b>
02.10PM-02.30PM	Lunch Break
02.30PM-03.30PM	Session IV: <b>Best Poster Session</b> (Judges: Dr A K Shukla, Dr L M Aggrawal, Dr Ajay Srivastava) <b>PP-1:</b> Management of treatment delivery to cancer patients in Radiation Oncology department during Covid-19 Pandemic: Pandemic preparedness plan in Radiation Oncology, PPP-RO <b>Aijaz Ahmed Khan Srirangar</b> <b>PP-2:</b> Intra Luminal Radio Therapy <b>Arputha Annamath Raj Noida</b> <b>PP-3:</b> LDNAC based Stereotactic Radiation Therapy with Varian High definition MLC for Brain metastases: a Dosimetric study <b>David Ayyavu Noida</b> <b>PP-4:</b> Measurement of Out-of-field dose for flattened and unflattened X-ray beams using Ionization chamber and MOSFET detector <b>Gobindraj A Bhaner</b> <b>PP-5:</b> The Correlation between Dose Homogeneity Index and Target Volume in Intracavitary brachytherapy treatment plans <b>Gurpreet Kaur Faridkot</b> <b>PP-6:</b> Dosimetric characterization of Radiation risk to eye, nose, parotid and thyroid gland in dental intraoral radiography <b>Ogunmade O.F Nigeria</b> <b>PP-7:</b> Effect of Human Tissue Composition on Dose Distribution for Low and High-energy Photon Emitting Sources Using GATE v6.2 <b>Lahcen Ait-Mouk Morocco</b> <b>PP-8:</b> A comparative dosimetric study of field in field and IMRT techniques in the treatment of breast cancer <b>Meenu Stephen P S Bangalore</b> <b>PP-9:</b> A Study of Radiopharmaceuticals Dispenser System in Nuclear Medicine Field <b>Noorfaiza Aida Baharul Amin Malaysia</b> <b>PP-10:</b> Decommissioning of Teletherapy Machine and Transport of Decayed Teletherapy Source <b>Priya Saini Jaipur</b> <b>PP-11:</b> Radiation Protection in Diagnostic Radiology <b>Samerpita Halder Kolkata</b>
03.30PM-04.30PM	Session V: Dr Preeti Negi, Dr Harish Gambhir, Dr Dimple Bhatia <b>P-1:</b> Design and development of QA device for verification of prescription dose in single channel HDR vaginal brachytherapy applications <b>Dr Chalappalli Sriniva: KMC Bangalore</b> <b>P-2:</b> QA of CT Simulator <b>Dr Ramesh Desai, Shreeji Medical Cyclotron, IMT Manesar</b> <b>P-3:</b> Comparative Study of Breast Radiation Therapy in Prone Position using Prone Breast Board couch Versus Supine Position <b>Mr Prakash Umbarkar Hinduja Hospital Mumbai</b> <b>P-4:</b> The Role of the Radiotherapy Technologist in Prospective Evaluation of Quality of Life Scores in Patients of Head-Neck Cancer on Radical Chemoradiotherapy <b>Mr Debojyoti Dhar Tata Cancer Hospital Andhra Pradesh</b>
04.30PM-06.00PM	Session VI: Dr Mary Joan, Mrs Manjinder Dhanoa <b>L-8:</b> The Physics of SBRT for moving targets <b>Dr Raghavendra Holla, Ruby Hall Clinic Pune</b> <b>L-9:</b> Treatment of AVM: Radiotherapist's perspective <b>Mr Deepak Kumar King Hamad University Bahrain</b> <b>L-10:</b> Virtual Environment Radiation Therapy (VERT): A virtual reality linear accelerator that brings treatment room to the classroom <b>Mr Subramanya Betageri Bellevue College USA</b>

The first invited talk of the conference was on 'Medical Physicists are indispensable' by Dr SD Sharma, President AMPI. Talk by Dr Dayanand Sharma on Hadron Therapy, Dr DN Sharma on Radiation Ablation for Cardiac Arrhythmias, Dr Aswin Kumar on Extracorporeal RT to Bone for Osteosarcoma Ms C Narmada on The Modular software platform for all Patient QA – VERIQA constituted the first session followed by Dr K Ganapathy on Artificial Intelligence applications in Intensity Modulated Proton Therapy, Dr Bhavana Rai on Brachytherapy in the era of precision RT, Mr Rakesh Kaul on Shining Girls -Dark Stories and Mr

Purushothaman K on Knowledge based planning features in Eclipse TPS constituted a brain storming second session. The Pearl Jubilee Best Poster session Comprised 11 poster presentations followed by the preferred paper session of 4 talks. The session VI, last session of Day 1 constituted talk by Dr Raghavendra Holla on Physics of SBRT for moving targets, Mr Deepak Kumar on treatment of AVM: Radiotherapist's perspective, Mr Subramanya Betageri on (VERT): A virtual reality linear accelerator that brings treatment room to the classroom. Each talk was followed by enlightening Q&A. Not only the queries were cleared, but also expert opinions were shared.

The second day, scientific programme started with a brief introduction on the international Day of Radiology by the Organising Secretary Dr Mary Joan. Prof Arun Chougule President AFOMP delivered the first talk on Medical Physicists Challenges as Health Professionals followed by the IDoR symposium on Interventional Radiology in CMC Ludhiana presented by Dr Vivek Agarwal and Dr Amit Batra. Dr S Panneer Selvam talked on MR Principles an overview and Mr Mukesh Jain on Artificial Intelligence:Way ahead for Radiology. The second session of the day, session VIII of the conference comprised of talk by Dr Rakesh Kapoor on Establishing a new cancer center-Pearls and

Perils, Dr Pankaj Tandon on Roles and Responsibilities of Nuclear Medicine Physicists in the Practice of Nuclear Medicine, Dr G Rijju on Role of PET based RT planning and concluded by the pre recorded video of Dr Madan Rehani's talk on Are oncology patients getting high radiation doses from CT and PET/CT exams . The Pearl Jubilee best oral paper presentation followed where 7 delegates presented their research work. The last session was a mind bloing panel discussion on Extends of the frontiers of Medical Physics in Diagnostic Radiology, Nuclear Medicine and Radiotherapy: Current Issues and Way Forward.

Overall, we had 10 scientific sessions which covered 18

Day 2 Time (IST)	Scientific Programme November 8 <sup>th</sup> , 2021 (Monday)
10.00AM-11.45AM	<b>Session VII: Dr Subhash Singla, Dr Anjali Susan</b> <b>I-11: Medical Physicists- Challenges as Health Professional</b> <b>Dr Arun Chougule AFOMP President</b> <b>I-12: IDoR Symposium: Interventional Radiology in CMC Ludhiana</b> <b>Dr Vivek Agarwal and Dr Amit Batra</b> <b>I-13: MR Principles - An Overview</b> <b>Dr S Panaseer Selvam SRIHER Chennai</b> <b>I-14: Artificial Intelligence.Way ahead for Radiology</b> <b>Mr Mukesh Jain SMSMC Jaipur</b>
11.45PM-01.30PM	<b>Session VIII: Dr Pamela Jeyaraj, Dr Abraham P Abraham, Dr Jerin Kuruvilla</b> <b>I-15: Are oncology patients getting high radiation doses from CT and PET/CT exams?</b> <b>Dr M Rehani IOAMP President</b> <b>I-16: Roles and Responsibilities of Nuclear Medicine Physicists in the Practice of Nuclear Medicine</b> <b>Dr Pankaj Tandon AERS Mumbai</b> <b>I-17: Role of PET based RT planning</b> <b>Dr Rijju G KIMS Thiruvananthapuram</b> <b>I-18: Establishing a new cancer center-Pearls and Perils</b> <b>Dr Rakesh Kapoor HBCHR Mullanapur&amp; Sangrur</b>
01.30PM-02.00PM	<p style="text-align: center;"><b>Launch Break</b></p>
02.00PM-03.00PM	<b>Session IX: Best paper session (Judges: Dr Arun Chougule, Dr Kamlesh Passi, Dr VK Dangwal)</b> <b>OP-1: Radiobiological modelling of radiation induced acute skin toxicity (dermatitis): a single institutional study of breast carcinoma</b> <b>Balbir Singh AIIMS Bhatinda</b> <b>OP-2: The influence of overall treatment time in TCP &amp; NTCP model based predictions for squamous cell carcinoma of head &amp; neck cancer treatment plans</b> <b>Ganesh Kumar Patel BHU Varanasi</b> <b>OP-3: The penumbra width determination of a single beam and 192 beams of Gamma Knife Perfexion™ based on Monte Carlo simulation</b> <b>J Junio: Indonesia</b> <b>OP-4: Dosimetric Comparison between Intensity modulated radiotherapy versus volumetric modulated arc therapy treatment plans for Breast Cancer</b> <b>Mahfuzur Rahman Bangladesh</b> <b>OP-5: Low Dose Total Skin Electron Beam Therapy for the treatment of Mycosis Fungoides: Case Report of a young female</b> <b>Misba Hamid SKIMS Srinagar</b> <b>OP-6: Compositional analysis of ex-vivo atherosclerotic plaque by Electron microscopy and contrast enhanced Dual Energy CT images to detect type of plaque</b> <b>Dr Susama Kani Mandal PGDMS Kolkata</b> <b>OP-7: Comparison of Treatment Plans in Breast Cancer Radiotherapy. An In-Vivo Phantom Dosimetry Study</b> <b>Sushma Poojar KMIO Bangalore</b>
03.00PM-04.30PM	<b>Session X:</b> <b>Panel Discussion: 'Extends of the frontiers of Medical Physics in Diagnostic Radiology, Nuclear Medicine and Radiotherapy: Current Issues and Way Forward'.</b> <b>Dr Arun Chougule SMS Jaipur (Moderator)</b> <b>Dr GK Rath AIIMS New Delhi</b> <b>Dr S D Sharma BARC Mumbai</b> <b>Dr Sanjay Sharma AIIMS Delhi</b> <b>Dr Rajesh Vashistha Max Bhatinda</b> <b>Dr A K Shukla PGDMS Lucknow</b> <b>Dr Pratik Kumar AIIMS Delhi</b> <b>Dr G Sahani AERB Mumbai</b> <b>Dr Lalit Agarwal BHU Varanasi</b> <b>Mr Gurvinder Singh Wadhawan RGI Delhi</b> <b>Dr P K Dash Sharma AERB Mumbai</b>
04.30PM-05.00PM	<p style="text-align: center;"><b>Valedictory Function</b></p>

invited talks, 4 proffered talks, 11 poster presentations and 7 oral presentations in addition to the IDMP messages from Presidents of IOAMP and AFOMP and a panel discussion on 'Extends of the frontiers of Medical Physics in Diagnostic Radiology, Nuclear Medicine and Radiotherapy: Current Issues and Way Forward'. Stalwarts in the field of Medical Physics, Radiation Oncology, Radiology, Radiation Technology who play significant role as educators, regulators and policy makers very actively interacted and given their insights on how to tackle the current issues and how to jump over the hurdles. Delegates from about 40 countries across the world took part in this virtual conference. A cumulative participation of 962 radiation professionals in the two-day conference was highly encouraging and definitely a morale booster not only to the organisers but also to the participants as well. An expert line of speakers were gathered on the virtual platform to share their views and experience on diverse professional issues and their resolution. It was a unique platform for all radiation professionals from different domains of radiation physics, radiation biology, radiation dosimetry and clinical medical applications to get together, know each other and appreciate and acknowledge the contribution of each domain. The organizers would like to take this opportunity to sincerely thank each and every one who spared the valuable time to actively participate in this conference enhancing the scientific exactitude of each other. We are confident that this IDMP -IDoR celebration 2021 will prove to be a milestone for the medical physics community and help us all in developing ourselves as indispensable healthcare professionals.

Below are few newspaper clips in local (Punjabi) and regional (Hindi) languages and in English.

On the occasion of International Day of Medical Physics & International Day of Radiology, the Departments of Radiation Oncology & Radio diagnosis CMC& Hospital Ludhiana is organizing a 2 day Virtual Conference on Radiation Applications in Medicine on the 7th & 8th of November, 2021.



**रेडियोलॉजी विषय पर कराई वचुअल कॉन्फ्रेंस**

लुधियाना। सीएमसी में इंटरनेशनल डे ऑफ मेडिकल फिजिक्स और इंटरनेशनल डे ऑफ रेडियोलॉजी के तहत वचुअल कॉन्फ्रेंस कराई गई। रेडिएशन एप्लीकेशन इन मेडिसिन विषय पर आधारित कॉन्फ्रेंस में रेडियोलॉजिकल इमेजिंग और ट्रीटमेंट के बारे में जागरूक किया गया। इसमें 350 से ज्यादा मेडिकल फिजिसिस्ट, टेक्नोलॉजिस्ट, रेडियोलॉजिस्ट और रेडिएशन ऑनकोलॉजिस्ट ने हिस्सा लिया। इस मौके पर पलं जुबली बेस्ट पोस्टर अवॉर्ड नाइजीरिया के फेडरल युनिवर्सिटी ऑफ टेक्नोलॉजी के ओमनटेड फेलिक्स ने पाया। जबकि पलं जुबली बेस्ट पेपर का अवॉर्ड एम्स ब्रिटिडा के बलबीर सिंह ने पाया। कॉन्फ्रेंस का आयोजन डॉ. जयनीत सचदेवा, डॉ. पामेला जयरॉज, डॉ. सुभाष सिंगला, डॉ. मैरी जॉन और मनजिंदर धनोआ ने किया।



**ਕੌਮਾਂਤਰੀ ਮੈਡੀਕਲ ਫਿਜ਼ਿਕਸ ਅਤੇ ਰੇਡੀਓਲੋਜੀ ਦਿਵਸ ਮੌਕੇ 2 ਰੋਜ਼ਾ ਸੁਥਾਈ ਸੈਮੀਨਾਰ ਸ਼ੁਰੂ**

ਲੁਧਿਆਣਾ, 7 ਨਵੰਬਰ (ਅਨੰਮਪੁਰੀ)- ਕੌਮਾਂਤਰੀ ਮੈਡੀਕਲ ਫਿਜ਼ਿਕਸ ਦਿਵਸ ਅਤੇ ਕੌਮਾਂਤਰੀ ਰੇਡੀਓਲੋਜੀ ਦਿਵਸ ਮੌਕੇ ਸੀ ਐਮ ਐਚ ਅਤੇ ਚਾਮਪਾਕਾਨ ਡਾਇਆਗਨੋਸਟਿਕ ਡਿਪਾਰਟਮੈਂਟ ਆਫ ਰੇਡੀਓਲੋਜੀ ਅਤੇ ਰੇਡੀਓਓਨਕੋਲੋਜੀ ਆਫ ਸੀ ਐਮ ਐਚ ਹਸਪਤਾਲ ਲੁਧਿਆਣਾ ਦੁਆਰਾ ਸੁਥਾਈ ਸੈਮੀਨਾਰ ਦਾ ਉਦਘਾਟਨ ਕਰਵਿਆ ਗਿਆ। ਸੈਮੀਨਾਰ ਦਾ ਉਦਘਾਟਨ ਕਰਵਿਆ ਗਿਆ। ਸੈਮੀਨਾਰ ਦਾ ਉਦਘਾਟਨ ਕਰਵਿਆ ਗਿਆ। ਸੈਮੀਨਾਰ ਦਾ ਉਦਘਾਟਨ ਕਰਵਿਆ ਗਿਆ।

**Conference on role of radiological imaging and treatment ends**

HT Correspondent  
ludhiana@hindustantimes.com  
LUDHIANA: A two-day virtual conference organised by Christian Medical College and Hospital to spread awareness on the contributions of radiological imaging and treatment to health care concluded on Monday. The conference was organised to mark International Day of Medical Physics and International Day of Radiology. The event was attended by around 350 delegates and it provided a platform to the medical fraternity to exchange ideas and information regarding improvement of patient care in the fields of radiation oncology and radiodiagnosis. National and international faculty members also presented research papers. During the virtual event, the Pearl Jubilee Best Poster Award was won by Ogunlade Oluwarotimi Felix from Federal University of Technology, Nigeria, while the Pearl Jubilee Best Paper Award went to Balbir Singh from AIIMS, Bathinda.



Medical Physicists have been very efficiently planning the radiation treatment for cancer patients, corroborating quality assurance of equipment and procedural protocols, researching on new diagnostic and treatment modalities, ensuring radiation protection and safety of patients and personnel in various streams of healthcare. It is the need of the hour to raise the professional profile of medical physics and we have tried to bring light to the current issues and how to resolve them.

The organizers highly appreciate the active participation, cooperation and endorsement of the organizations IOMP, AFOMP, SCMP, AMPI NC, NZ AROI, IRIA, NMPAI, NAAD, A RTTI and ISRT for their support in organizing this conference. A word of thanks to AMPI NC and our trade partners, without whom this conference couldn't be arranged as beautiful as it was.

As discussed and disseminated in the conference, a single day or two days IDMP celebrations might not completely serve the purpose of uplifting the professional status of medical physicists in healthcare. We should equip and improve ourselves to meet the challenges efficiently. There are great times ahead of us; Country needs our service. Each one of us is needed - in our country, community and university - to ensure decisive, visible and measurable actions are taken for the medical physics profession. As we celebrated the IDMP and IDoR 2021 by holding this international Virtual Conference on Radiation Applications in Medicine, the spirit of this conference will make each and every one of us to be a leader not only within our own spheres of influence but also in the associated multidisciplinary specialties and commit to take pragmatic action to accelerate professional and personal development. Wishing everyone a fruitful IDMP & IDoR 2021!



# Scientific Article -1

## A Brief Review on EPID Dosimetry in IMRT

Wennie Song<sup>1</sup>, Sivananthan Sarasanandarajah<sup>2</sup>, Sisira Herath<sup>2</sup>, and Pradip Deb<sup>1</sup>  
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### Introduction

Radiation therapy (RT) involves the use of megavoltage x-ray photons in selective cell killing; most often used against tumour cells. Its selectivity is mainly achieved via shielding of healthy tissues with multi-leaf collimators (MLCs) or lead blocks in traditional 3D Conformal Radiation Therapy (3DCRT). This allows for radiation dose distributions to be shaped around the target volume whilst sparing the adjacent healthy tissues. With 3DCRT, this is achieved with static fields and static MLC leaves. A more complex technique developed to increase the ability to shape radiation is Intensity Modulated Radiation Therapy (IMRT).

IMRT modulates the intensity of the radiation fluence across a field. This involves the use of multiple beam segments for each field, where varying MLC shapes for a single beam angle are used to create a more conformal 3D dose distribution with steeper dose gradients across the treatment field. IMRT's use has thus been focused on target volumes located in anatomically compact regions, such as the head and neck (H&N) and the pelvis/abdomen, or in the case of concave target volumes enveloping healthy tissues. Intensity modulation allows for the creation of tightly sculpted 3D dose distributions that wrap around the tumour whilst avoiding immediately adjacent critical structures. Modulation within a larger target volume can also be utilised to deliver simultaneous boosts of increased dose to high-risk sub-volumes. IMRT hence allows for the escalation of treatment dose while minimising the associated side effects to the patient. This creates a complicated combination of spatially varying steep dose gradients within a small area.

The inverse planning process of IMRT produces the optimal combination of individual fluences from each beam angle to result in the ideal 3D dose distribution. This is accomplished mainly with specific MU values, MLC apertures and movement speeds per field. The effectiveness of IMRT hinges on the ability to accurately deliver what has been planned on the treatment planning system (TPS). Errors could be introduced at any point; during the data transfer from TPS to Linac, during treatment delivery, and in-between fractions because of incorrect patient setups or minute anatomical variations [1]. Hence, IMRT requires a number of quality assurance (QA) procedures prior to actual treatment delivery. The precise combination of beam parameters that create the tight conformality of dose to a particular target volume necessitates that these QA procedures be patient-specific. Pre-treatment QA currently dominate clinical IMRT QA procedures. They can be in the form of ion chamber or film measurements within a tissue-equivalent phantom, and 2D diode arrays such as MapCHECK [2-5]. The aforementioned dosimetry systems are external to the linear accelerator (Linac) and require tedious setups prior to use. Film dosimeters also further require scanning before data is readable.

Therein lies the draw in developing the electronic portal imaging device (EPID) as a viable dosimeter for clinical use. EPIDs currently commonly used are amorphous-silicon (a-Si) scintillation panel detectors that are directly attached to the Linac. Their original use as an imaging device has well established EPID's role in patient setup verification QA. However, their potential as a more convenient 2D dosimeter is slowly gaining

speed in the field of RT. Aside from its technical advantages over previous dosimeters, its primary benefit stems from the setup convenience and inherently reduced manual positioning errors [3, 4, 6-9]. However, accurate EPID dosimetry can only be achieved if its drawbacks can be corrected for, such as its non-tissue equivalent dose response [10-12], field size dependence [7, 9, 10, 13, 14] and associated low energy over-response [3, 4, 12, 15].

QA can be achieved with both non-transit and transit dosimetry [16]. Nontransit dosimetry is the measurement of dose without the attenuating medium (phantom or patient) between the source and the dosimeter. With this method, technical aspects of the treatment can be validated, such as desired machine output and dose fluences [8]. Transit dosimetry is the measurement taken behind the phantom or patient; this accounts for the varying levels of attenuation and scatter from the medium. Hence, possible errors to be detected would include patient positioning and anatomical deviations. Both methods involve data analysed at the level of the dosimeter.

Pre-treatment IMRT QA procedures generally involve non-transit dosimetry in the form of third-party software such as Mobius3D (Mobius Medical Systems, LP), which validates treatment parameters independently of the TPS, as well as the use of film or diode arrays to compare delivered dose fluences. These methods verify TPS dose calculations and Linac output respectively, without considering the effects of patient transmission on the dose delivered.

In-vivo dosimetry involves the measurement of dose within the patient; this can be done direct measurements within or via back-projection of data to a plane within the medium. Not only can patient geometry vary between individuals, but the internal spatial positions of anatomy may differ with time for the same patient. Since a treatment plan is created around the patient's planning CT scans; this capture of patient anatomy is not guaranteed to be identical at every treatment fraction, especially since treatment could commence only 2-4 weeks after that initial scan. Hence, in-vivo dosimetry particularly for treatment sites with frequent internal motion is likely to produce most benefit.

An ideal would be to combine the convenience and high performance of EPIDs with the clinical usefulness of transit, and subsequently, in-vivo QA of IMRT. This review hence aims to evaluate EPIDs potential as an in-vivo dosimetry system for IMRT; particularly in cinematic/continuous mode (cine-mode).

### **EPID Characteristics & Dosimetric Properties**

EPIDs have commercially come in 3 different models: camera-based, liquid ion chamber-based and indirect scintillation types. Camera-based EPIDs have a high spatial resolution, fast image acquisition times, and the obtained pixel values are relatively linear with dose. Liquid ionisation chamber EPIDs have a relatively long read-out time and are unable to obtain direct dose measurements. It is best suited for evaluating dose-rates, from which absolute dose can be derived. Both versions have poorer spatial and contrast resolutions as compared to film [10].

A-Si EPIDs are currently the most commercially utilised model of the imager panel. Its main components include a large pixel array (comprising of hydrogenated amorphous silicon film switches and capacitive circuitry), as well as an x-ray converter (made up of a 1mm copper metal sheet and a phosphor scintillator). The copper layer acts both as shielding against low energy scatter, and a generator of Compton electrons and x-rays. These would further interact with phosphor layer to produce optical photons that contribute to the EPID image [16]. The a-Si EPID has a higher detective quantum efficiency but possess a nontissue equivalent dose response as a result of the high atomic numbers of its components [4, 10, 15, 16]. This ultimately creates an over-response to low energies, especially with regards to scatter within the detector itself. This ultimately translates to a sensitivity to a pixel's off-axis position (beam softening), and varying patient thicknesses [4, 8, 11, 12, 16]. Its dose-response that is estimated to be linear with integrated dose, and unaffected by dose-rate. Its higher spatial resolution (approximately ranging from 0.4 x 0.4 to 0.784 x 0.784 mm<sup>2</sup> between manufactured models) is superior to current matrix detectors. Studies have suggested the use of a copper plate build-up as shielding against low-energy scatter, whilst also providing electronic equilibrium [4, 8, 13]. By improving the ratio of high energy photons that reach the detector, EPID image quality would also improve [21]. Ghosting and image lag are also issues, specific to this type of EPID; of which depend on duration of exposure and the ratio of dose in-between 2 consecutive irradiations [8, 12]. These degrade the linearity of dose response, as well as pixel sensitivity [16]. EPID dosimetry offers speedy data acquisition along with setup convenience, as well as a higher spatial resolution than array detectors [3, 4, 6-9, 17]. It also exhibits stable reproducibility of response [3, 13, 16] and inherently provides data points across the entire field of delivery [9]. EPID dosimetry has been demonstrated with comparable accuracy and information to that of film [18].

Two main approaches to EPID dosimetry are the evaluation of transit dose at EPID level, and the back-projection of that dose to a plane within the patient (in-vivo) [12]. In-vivo dosimetry has the capability of detecting errors undetected by pretreatment QA, primarily due to actual patient transmission as opposed to a standard phantom [17, 19]. A study by Mans et al, [20] evaluated a back-projection method that detected 9 out of 17 errors that would have otherwise been missed by pretreatment QA. Another study by Bojecho et al, showed in-vivo dosimetry detecting 74% of clinically reported errors as compared to the 6% from pre-treatment QA [19]. Ali et al, [17] highlighted the benefit of in-vivo QA detecting clinically significant errors especially during the first fraction.

In essence, scintillating EPIDs obtain indirect measurements, x-ray photons are converted to optical photons via the scintillating screen. This scintillation also creates an "optical glare" effect. Out-of-field pixel values appeared to increase due to this effect [21], as well as the degradation of the images' spatial resolution [11]. Some studies have attributed the poorer agreement between planned and measured distributions because of the glare effect, since the TPS does not model the blurring effect of the optical glare into dose calculations [15]. Even so, the direct coupling of photodiodes to the phosphor layer (source of the optical photons) is expected to minimise the effect of optical glare on a-Si EPID response [16].

Another issue of consideration is the contribution of backscatter from the mechanical support arm behind

the EPID detector panel. This creates dosimetric inaccuracies and might require correction kernels to be incorporated into dose conversion algorithms [4, 16].

### **EPID Dosimetric Modes**

EPID dosimetric acquisition can be achieved in 2 different modes: integrated and cine-mode. A frame is an image formed from a single scan of all pixel rows in the panel. The integrated mode involves the combination of all frames acquired into a single pixel-averaged image and does not provide varying images during a dynamic treatment [22]. Cine-mode allows for the measurement of dose distributions as a function of beam angle and time; a series of images is captured instead of the one in integrated mode. The user could save all acquired frames for subsequent analysis or specify the number of frames that would produce the saved image.

The bulk of existing literature has expounded on the use of integrated mode in EPID dosimetry and its validation against existing dosimeters [9-11]. While this modality simplifies the amount of data to be acquired and analysed, the increase in use of dynamic RT treatments also increases the need to consider the time-dependent aspect of dose delivery. The multiple-frame capture of cine-mode incorporates time-relevant information into EPID dosimetry; especially in techniques where MLC leaves move while the irradiation beam is on and dose distributions become temporally and spatially dependent.

A study by Peca et al, [23] demonstrated a proof of concept with cine-mode in detecting inter-fraction deviations for rectal 3DCRT patients. Both integrated and cinematic acquisition modes have showed good agreement in the validation of both static and dynamic IMRT treatments [16, 46]. Sabet et al, [4] demonstrated an agreement within 1% between cine-mode and ion chamber measurements in H&N IMRT, even without scatter correction kernels. Another study verified the fundamental dosimetric properties of cine-mode, by applying only flood-field and dark-field corrections in IMRT QA, and demonstrated a good agreement with film to within 5% (13). Piermattei et al, [22] evaluated cine-mode in-vivo dose reconstruction with dynamic arc therapy and demonstrated that the agreement between predicted and measured dose was within 5% accuracy.

Most EPID image-to-dose conversion algorithms are still in development and/or are mainly in-house procedures specific to individual clinics. A few examples include the 2D back-projection method explained by Wendling et al, [3], and the methods of estimating mid-plane dose with EPID transit dosimetry by Piermattei et al, [24] and Boellaard et al, [25] independently. Furthermore, these QA methods largely require experience-based assessments of physicists to identify the clinical significance of detected dose deviations [26].

There are few commercially available dose-converters; examples would be EPIDose by Sun Nuclear Corporation that converts EPID pixel images to dose maps [10, 27], EPIQA, and the Portal Dosimetry by Varian Medical Systems that predicts EPID images based on what is delivered. These methods may be used for both pretreatment and/or treatment fraction QA, but each come with their individual setbacks [28];

such as being specific to care management software, tedious time-consuming implementation, or high monetary costs.

## Conclusion

IMRT has undeniable benefit in its ability to deliver higher doses to targets whilst minimising side effects via increased dose conformality. Its effectiveness hinges on the ability to accurately deliver what has been planned. The convenience of EPID dosimetry is clear, and with the appropriate correction factors in place, it can provide a high-resolution dose verification method for patient-specific QA in the minimum of 2D. However, there has yet to be a method for EPID dosimetry that can be efficiently and easily applied across clinics. Standardising QA procedures would allow for more accurate evaluation of complicated RT techniques across global patient cohorts, and ultimately facilitate evidence-based practice.

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## Scientific Article -2

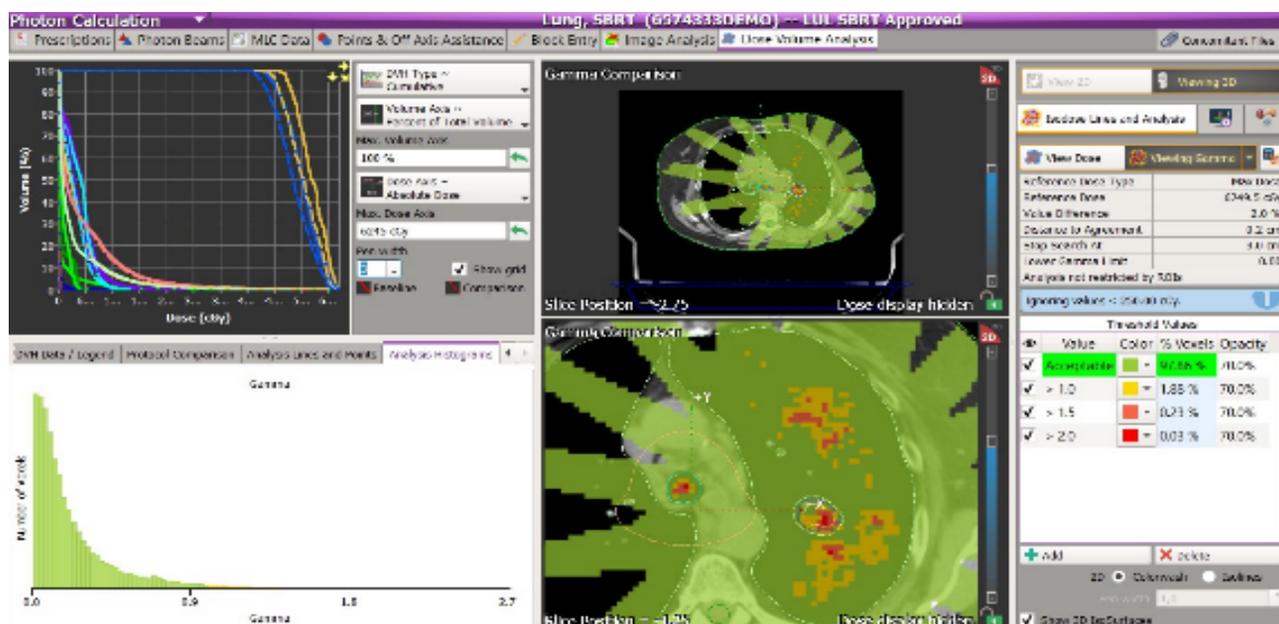
### How 3D patient QA highlights uncertainties and catches errors

Carlos Bohorquez, M.S., D.A.B.R  
Product Manager for Rad Calc LifeLine Software, Inc.,

The field of radiotherapy has been progressing at a tremendous rate over the last couple of decades, leading to more complex treatments with higher doses, sharper gradients, and reduced margins. In turn, a demand has grown within our community for increased guidance of dose metrics for both the efficacy of the treatments and the associated normal tissue complications. (1)(2) Simultaneously, a need to commit to better methods of PSQA has come to light.

Since 2014, I have been investing in this commitment for 3D secondary check systems. As solutions came to market and evolved, many more in our community envisioned the issues that I, too, encountered at the beginning of my journey. Some of these issues, including the increased sensitivity for errors, the need for automation and better efficiency, were highlighted in a great publication (3) that helped me in my first clinical implementation of an independent 3D secondary check.

I have worked with many members in our community as they transition into using 3D secondary checks and have encountered numerous errors in treatment planning. These errors come from a variety of sources and include modeling of delivery systems, such as: MLC leaf ends, MLC tongue-and-groove effects, leaf/collimator transmission, collimators/MLC penumbra, compensator systems (scattering, beam hardening, alignment), output factors for small field sizes, head backscatter, and off-axis profiles. They also include failures in selection of the appropriate dose calculation grid size and the use and modeling of heterogeneity corrections.

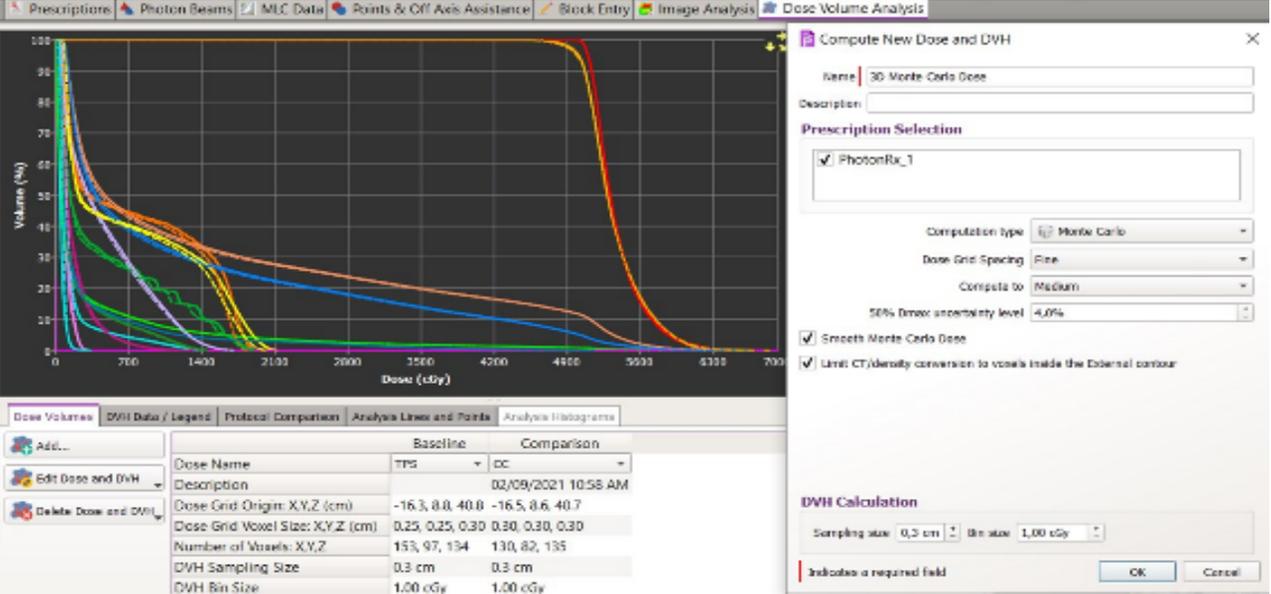


RadCalc provides Percent difference, DVH, Distance to Agreement and Gamma analysis tools to evaluate 3D computations

In my experience, 3D secondary checks have caught countless safety issues. However, they tend to also



highlight many plan quality issues, likedemonstrating differences in doses throughout the whole patient, not just at pre-selected points and 2 dimensional planes. This allows for the evaluation of the dose in every voxel, the ability to do DVH analysis and utilize planning protocols to evaluate specific planning criteria automatically and rapidly.



*3D calculation algorithms: RadCalc provides Collapsed Cone Convolution Superposition and Monte Carlo based algorithm modules*

These observed concerns have now been validated in the release of the AAPM's Task Group 219 (4), highlighting the limitations of single point comparisons, and recommending a transition to secondary checks that compute the dose distribution of the high dose volume. TG-219 also emphasizes the need for the secondary check to be independent. The report does a great job highlighting the key tasks for acceptance and commissioning of secondary check systems.

Nonetheless, the report misrepresented the commercial solutions available in the market at the time of its publication, mainly that of RadCalc(LifeLine Software, Inc., a part of the LAP Group) and its 3D modules which include both Collapsed Cone Convolution/ Superposition and gold standard Monte Carlo. Released in January of 2020 with version 7.1, RadCalc's 3D dose modules utilize your clinically measured beam data to bring excellent accuracy. Furthermore, the previously released RadCalcAIR module brings a comprehensive solution to your clinical workflow with intelligent automation features, evolving directly from customer suggestions.



3D PSQA solutions



RadCalc 7.1 also offers all the tools needed for a thorough evaluation of treatment plans, such as the ability to separate plans into individual beams and options to automatically add analysis points and lines right from RadCalc, eliminating the need to modify plans within your treatment planning system. RadCalc also places the user in control of their QA program with the flexibility to select the hardware used for the 3D dose calculation and the scalability to fit any clinical network.

Additionally, the AAPM's Task Group 219 highlights the tools and benefits of Dosimetry Check (Math Resolutions, LLC) for pre-treatment in air QA and in vivo dosimetry. This US-patented technology is now fully integrated into our new RadCalc v7.2 released at ASTRO 2021! Giving you a seamless workflow for all your Patient Specific QA needs.

“-Updated from originally published piece in the EFOMP Newsletter, 03/2021 Autumn”

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# AFOMP Awards & Honors 2021

## AFOMP

### KIYONARI INAMURA MEMORIAL AFOMP ORATION 2021



#### Orator

**Prof Dr. TAE SUK SUH, Ph.D.**

The Kiyonari Inamura Memorial AFOMP Oration of the Asia-Oceania Federation of Organizations for Medical Physics (AFOMP) is held annually at the Asia-Oceania Congress on Medical Physics [AOCMP]. It is held to honor the contribution to medical physics by Professor Inamura who was one of the founders of, and contributed significantly to, the sustained development of AFOMP.

The 2021 Orator is Professor Dr Tae Suk Suh. Professor Suh is a Professor of Medical Physics at Dept. of Biomedical Engineering, director in "Research institute of Biomedical Engineering" and "Advanced Research Center for Medical Physics" at the Catholic University of Korea. He obtained BS in nuclear engineering from Seoul National University of Korea and received MS and PhD in medical physics from the University of Florida, USA. Professor Suh's career has spanned more than 40 years, a period which has witnessed huge advances in radiosurgery hardware and planning systems. He has contributed greatly towards the development of radiosurgery optimization techniques. He was the first to undertake flattening filter free (FFF) beam-based radiosurgery in a clinical setting. He also pioneered many other technologies, including the development of the radiation treatment planning system and 3T active shield magnetic resonance imaging.

Having established his academic career in Korea, Professor Suh has served as an editor and editorial board member for many international journals of medical physics. He organized the World Congress on Medical Physics and Biomedical Engineering in 2006 (WC 2006, Seoul) and the Asia-Oceania Congress of Medical Physics three times in Asia (AOCMP 2002, 2006 and 2011).

As Secretary General of AFOMP during 9 years since 2003, he has been doing a lot of job in promoting the development of medical physics on a global basis. As President of AFOMP, he provided an effective solid platform for closer collaboration and mutual support amongst the medical physics organizations in the AFOMP. He has been working as a chair of publication committee of IOMP for 6 years. He also has worked as IMPCB Record and Registry Committee (RRC) chair. Professor Suh received awards from IOMP and AFOMP; outstanding contribution over the last 50 years (2013), IDMP (2020) etc. Dr. Suh published over 300 peer-reviewed papers and more than 1300 proceedings.

The Asia-Oceania Federation of Organizations for Medical Physics is honored to have Professor Tae Suk Suh, the 2021 Kiyonari Inamura memorial AFOMP Orator.



*Arun Chougule*  
Professor Arun Chougule  
President AFOMP

## AFOMP Awards & Honors 2021

# AFOMP

### AFOMP LIFETIME ACHIEVEMENT AWARD 2021



**Professor**  
**Masahiro Endo**

Lifetime achievement awards of the Asia-Oceania Federation of Organizations for Medical Physics recognize persons for their outstanding contribution to Medical Physics education, training, research and medical physics profession development in AFOMP region.

The award was established in 2020 and Professor M Endo has been awarded this honor in 2021 for his enduring contributions to a large range of medical physics activities in the AFOMP region. Masahiro Endo entered the University of Tokyo in 1967, earning a bachelor's degree in 1971 and a master's degree in 1973 in the field of physical science. After working at the National Institute of Radiological Sciences (NIRS) on development and application of medical imaging devices such as CT and PET, he received his PhD in the field of medical science from Chiba University in 1982.

It is characteristic for the broad view taken by Professor Endo on medical physics that he applied his expertise on imaging to the evolving research project to treat cancer using heavy ion beams. He joined the HIMAC (Heavy Ion Medical Accelerator in Chiba) Construction Group where in addition to image guidance and motion management work - he developed the three-dimensional treatment planning system HIPLAN that continued to be used until 2012. Masahiro Endo was promoted to Director of Medical Physics at NIRS in 2001 and joined the SAGA HIMAT project as the Chief Technical Officer. Here he was instrumental in the construction of the fourth heavy ion radiotherapy facility in Japan.

One of Prof Endo's most important contributions to science has been the development of a cone-beam CT system in the 1990s. This was a visionary achievement for which he was awarded several awards from the Japanese Government. He also was named one of the outstanding medical physicists to celebrate the 20th Anniversary of AFOMP in 2020.

In addition to all his scientific and development work, Prof Endo was actively involved in professional life. He led the founding of the Japan Society of Medical Physics (JSMP) in 2000 and served the organization as President (for 10 years) and auditor (for 3 years). He also served as the organizing chair of the 5th Asia-Oceania Congress on Medical Physics (AOCMP), which was held simultaneously at the 4th Japan-Korea Meeting in 2005.

It is apt that Professor Endo's most recent work includes a history of medical physics (*Radiol Phys Technol 2021*), a history to which he has contributed significantly. AFOMP would like to congratulate Professor Endo to being awarded the AFOMP Lifetime Achievement Award 2021



*Arun Chougule*

Professor Arun Chougule  
President AFOMP

### AFOMP

#### **AFOMP congratulates Prof. Arun Chougule on being honoured as Fellow of IOMP !**



Many congratulations to Prof Arun Chougule, President AFOMP on being honoured as the Fellow of the International Organization of Medical Physics (FIOMP). This honour aims to recognize those who have made outstanding contributions to IOMP and its regional organizations over a significant period of time for the international development of medical physics.

His exemplary academic and research career in Medical Physics with great leadership contributions to the professional development started in 1984 in India. Prof. Chougule has contributed immensely to the medical physics education and training, research, professional development and recognition of the profession in the local, regional, national and international rostrums. He is currently the President of AFOMP, Chair of ETC IOMP, Chairman of IOMP accreditation Board and member Board of Directors IMPCB. He held positions like Dean, Student Welfare, Rajasthan University of Health Sciences (RUHS), Member, Board of Management, RUHS, Member, Academic Council, RUHS, Chairman, Unfair Means Redressal Committee, RUHS, President, AMPI [[www.ampi.org.in](http://www.ampi.org.in)], Dean, Faculty of Paramedical Sciences, Pro-Vice Chancellor, RUHS and active involvement in the institutional administration as a member of the board of management, the clinical trial screening committee, the ethics committee, the research board and so on in turn increasing the visibility of the medical physics profession and outreach to fellow medical professionals and general public.

Dr. Chougule is the founding and fellow member of over 35 scientific, professional societies and accreditation boards. He is founder member of CMPI. As chair of ETC, IOMP, he has put tremendous efforts to advance medical physics practice worldwide by disseminating scientific and technical information, fostering the educational and professional development of medical physics and promoting the highest quality medical services for

## AFOMP

patients. As AFOMP President, he works towards the expansion of the activities of AFOMP, strengthening financial resources and activating NMO's. During the time of COVID-19 pandemic, he facilitated the release of AFOMP documents for medical physicists. AFOMP became popular among the medical physics professionals of all NMOs through the regular conduct of monthly webinars which was started to celebrate the AFOMP 20th anniversary, AFOMP school webinars and initiation of many AFOMP awards, honours and recognitions to novices and doyens of medical physics to acknowledge and highlight their contributions and achievements.

He is a teacher par excellence, editor, associate editor, advisor and reviewer of many reputed national and international journals, research guide and co-guide to many, principal investigator for many national and multinational research projects. He was instrumental in developing paramedical sciences in the state of Rajasthan. In addition to fulfilling his clinical, academic, research and educational responsibilities he takes care of his social responsibilities very seriously and his contributions toward the betterment of society in terms of cancer awareness, early detection, treatment and rehabilitation are outstanding garnering national and international acknowledgement.

Dr. Chougule organizes national and international scientific meetings and teaching programmes in medical physics, radiation oncology, diagnostic and therapeutic radiation technology and other medical radiation applications regularly to disseminate basic/ advanced education of international best standards to young professionals in medical physics. He organized IDMP every year and IMPW celebrations at his home institute to impart awareness about the medical physics profession among healthcare professionals and general public.

Prof Chougule is honoured with FIOMP along with seven other exceptional leaders of medical physics across the globe and AFOMP takes great pride in this honour to the President. This is indeed a true inspiration to all the medical physicists in AFOMP and also across the globe.

Prof. Anupama Azhari  
Secretary General, AFOMP

## AFOMP Awards & Honors 2021

AFOMP congratulates Prof. Arun Chougule on being conferred as Fellow of National Academy of Medical Sciences !



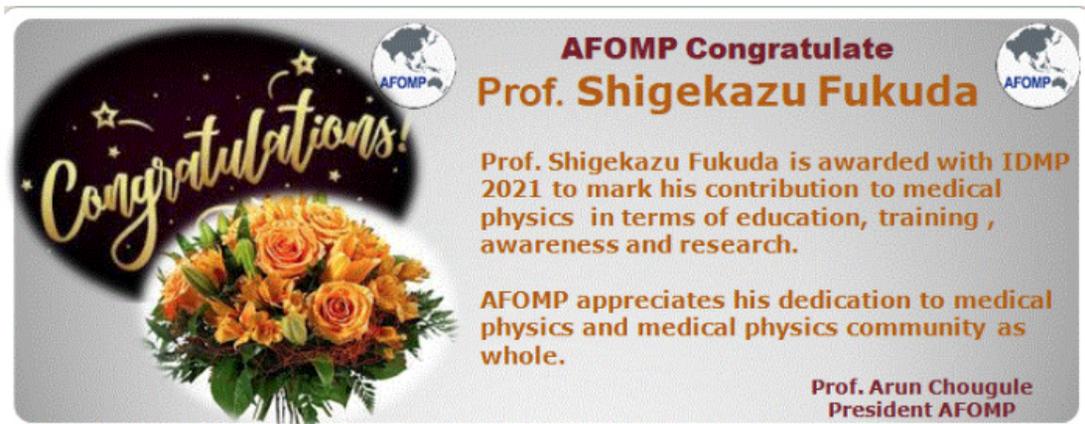
**AFOMP Congratulate**

**Prof. Arun Chougule**

*He is awarded with "Fellow of National Academy of Medical Sciences"(FAMS). He is the first Medical Physicist to receive this highest national medical sciences honor in the history of NAMS and Medical physicist community of India. He is a true achiever and Inspiration to all young medical physicists.*

*Prof. Hasin Anupama Azhari  
Secretary General AFOMP*

AFOMP congratulates Prof. Shigekazu Fukuda on awarded with IDMP 2021 Award !



## AFOMP Awards & Honors 2021

AFOMP CONGRATULATES DR. **WONJOONG CHEON**  
FOR WINNING  
**C.V. Saraswathi -A.N. Parameswaran Memorial  
AFOMP Best Ph.D Award 2021”**



**Dr. WONJOONG CHEON, Ph.D**

Medical Physicist (physics residency), Proton Therapy Centre, National Cancer Centre,  
Goyang-si 10408, Republic of Korea

**AFOMP awards Ying Song with P.N  
Krishnamoorthy Memorial AFOMP Young  
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**“P.N Krishnamoorthy Memorial AFOMP Young Achiever  
Award 2021”**



**YING SONG**

Physicist, Division of Medical Physics, West China Hospital  
No. 37, Guoxue Alley, Wuhou District  
Chengdu, Sichuan, China

## AFOMP Awards & Honors 2021

AFOMP awards Pro. Sung Sil Chu's AFOMP Best Student Publication Award 2021 to Ms. Hemalatha Athiyaman. Congratulations !

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**Hemalatha Athiyaman** FOR WINNING  
Professor Sung Sil Chu's AFOMP Best Student  
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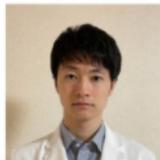
Title of paper

Out-Of-Field Dose Measurement and Second Cancer-Risk Estimation Following External Beam Radiotherapy and Brachytherapy for Cervical Cancer Treatment: A Phantom Study

Journal: Iran J Med Phys, Vol. 17, No. 4, July 2020

AFOMP congratulates Yoshiro Ieko for winning  
AFOMP Journal Prize for the Best Paper  
published in an AFOMP journal publication, 2021

**AFOMP CONGRATULATES YOSHIRO IEKO FOR WINNING  
AFOMP JOURNAL PRIZE FOR THE BEST PAPER PUBLISHED IN  
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Radiological Physics and Technology (2020) 13:230–237  
<https://doi.org/10.1007/s12194-020-00572-5>

The impact of 4DCT-ventilation imaging-guided proton therapy  
on stereotactic body radiotherapy for lung cancer

Yoshiro Ieko<sup>1,2</sup> · Noriyuki Kadoya<sup>3</sup> · Takayuki Kanai<sup>1,2</sup> · Yujiro Nakajima<sup>1,4</sup> · Kazuhiro Arai<sup>1,2</sup> · Takahiro Kato<sup>5,6</sup> · Kengo Ito<sup>7</sup> · Yuya Miyasaka<sup>1,2</sup> · Ken Takeda<sup>7</sup> · Takeo Iwai<sup>7</sup> · Kenji Nemoto<sup>2,3</sup> · Keiichi Jingu<sup>1</sup>

**Yoshiro Ieko**

Medical Physicist and an Assistant Professor

Iwate Medical University

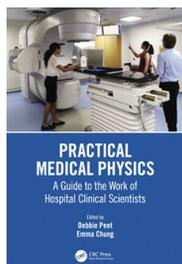
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## CRC Book review 2021



**Dr R K Bisht**

Senior Medical Physicist and RSO  
Department of Radiation Oncology  
National Cancer Institute Jhajjar Campus,  
AIIMS, New Delhi



### **Practical Medical Physics: A Guide to the Work of Hospital Clinical Scientists**

**Editors:** Debbie Peet, Emma Chung

**Debbie Peet** is the Head of Medical Physics in the **University Hospitals of Leicester, National Health Service (NHS) Trust**. She is a Clinical Scientist and expert in various fields of medical physics. Her field of interest is radiation safety and diagnostic radiological physics. She has an extensive interest in the facility design for radiotherapy and nuclear medicine. She has published several book chapters in various trendy books on medical physics and nuclear medicine. **Emma Chung** is a Lecturer (Medical Physics) in the **University of Leicester Department of Cardiovascular Sciences**. She is a registered NHS Clinical Scientist specializing in ultrasound physics and has been the recipient of numerous prestigious research awards.

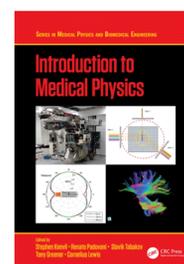
This textbook is useful to support trainee clinical medical physicists in academic master's course. The book provides an introduction to the daily task performed by the clinical scientist in hospitals. It bridges the gap between theory and practice for medical physics within the hospital environment and suitable for the clinical scientist training programme (STP) explicitly in the National Health Service (NHS).

**ISBN 9781138307537, Published August 25, 2021 by CRC Press**

### **Introduction to Medical Physics (1st edition)**

**Editor/s:** Stephen Keevil, Renato Padovani, Slavik Tabakov, Tony Greener, Cornelius Lewis

**Stephen Keevil** is the Head of Medical Physics at Guy's & St Thomas' National Health Service Foundation Trust. Professor Keevil is actively involved in the academics and research in magnetic resonance imaging (MRI) physics. **Renato Padovani** is a consultant medical physicist at the International Centre for Theoretical Physics (Trieste, Italy) and the Coordinator of the Master of Advanced Studies in Medical Physics. He is also a teacher of radiation dosimetry and radiation protection. **Slavik Tabakov** is Vice-President of the International Union of Physical and Engineering Sciences in Medicine and Coordinating Director of the International College on Medical Physics, ICTP, Trieste, Italy. Prof. Slavik was expert in many IAEA projects related X-ray Diagnostic Radiology. **Tony Greener** was head of the radiotherapy physics team in the south of London and beyond. He is an academician and taught radiotherapy physics to medical physics trainees, clinical oncologists, radiotherapy radiographers and medical students. **Cornelius Lewis** has worked in a number of National Health Service Trusts across London in diagnostic radiology, nuclear medicine and radiation protection. He was the Director of Medical Engineering and Physics Department of King's College Hospital, London.



This textbook provides an introduction to the basic principles of medical physics, medical imaging, radiotherapy, the applications of medical physics equipment, and the role of medical physicist in healthcare. The first edition of **Introduction to Medical Physics**, provides worked examples relevant to actual clinical situations.

**ISBN 9781498744799, January 18, 2022 (pre-order, book ship after 18/01/2022) by CRC Press**



**Encyclopaedia of Medical Physics (2nd edition), Two Volume Set**

**Editors:** Slavik Tabakov, Franco Milano, Magdalena S. Stoeva, Perry Sprawls, Sameer Tipnis, Tracy Underwood

Slavik Tabakov is the Director of the Postgraduate MSc Medical Engineering and Physics and MSc Clinical Sciences Programmes at King's College London. Franco Milano is a Professor of Medical Physics at the University of Florence, Italy. He is an appointed expert on behalf of the International Atomic Energy Agency in the areas of radiotherapy and diagnostic imaging. Magdalena Stoeva is a Professor in the Diagnostic Imaging Department and in the Translational Neuroscience Centre of the Medical University Plovdiv, Bulgaria, where she is appointed as an expert and teacher for medical physics, medicine, and dentistry students. Perry Sprawls is a medical physicist, a bioengineer and Professor Emeritus of Radiology for Emory University, USA. Sameer Tipnis is Associate Professor in the Radiology and Radiological Sciences department at the Medical University of South Carolina, USA. Tracy Underwood is a EC Marie Curie Research Fellow with a joint appointment at Harvard Medical School, USA, and University College London, UK.

This book contains over 3300 cross-referenced entries related to medical physics and related technologies. The Second edition of Encyclopaedia of medical physics describes recent and existing methods and equipment in medical physics. More than 100 specialists contributed and updated the newest technologies and developments in the field, such as phase contrast imaging, proton radiotherapy, 3D/4D imaging, multi-detector computed tomography, new clinical applications of various imaging modalities, and the relevant regulations regarding radiation protection and management. The book covers various topics on recent medical imaging, radiotherapy, and radiation protection.

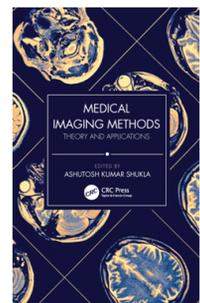
**ISBN 9781138592148 Published July 20, 2021 by CRC Press**

**Medical Imaging Methods (1st edition): Theory and Applications**

**Editor:** Ashutosh Kumar Shukla

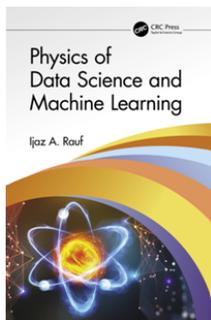
Dr. Ashutosh Kumar Shukla is an Associate Professor of Physics at Ewing Christian College, Prayagraj, Uttar Pradesh, a constituent college of University of Allahabad, India.

The theoretical and practical aspects of diagnostic imaging techniques is presented in this first edition of Medical Imaging Methods: Theory and Application. The book chapters



discusses radiation exposure, radiation sensitivity, signal penetration, tissue interaction, and signal confinement with reference to individual imaging techniques. The book is focusses on the clinical applications of medical imaging including less to established imaging methods. The book not only help students and researchers in biomedical imaging, radiology and instrumentation but also covers the concepts of nanoparticle applications in medical imaging

**ISBN 9780367630799, (pre-order. Item will ship after December 27, 2021) by CRC Press**



**Physics of Data Science and Machine Learning (1st edition)**

**Author:** Ijaz A. Rauf

**Ijaz A. Rauf** is Adjunct Professor at the School of Graduate Studies, York University, Toronto, Canada. He is also an Associate Researcher at Ryerson University, Toronto, Canada and President of the Eminent-Tech Corporation, Bradford, ON, Canada.

The book, **Physics of Data Science and Machine Learning** provides the fundamental concepts of physics to data science, data mining, machine learning (ML), and artificial intelligence (AI) for physicists and non-physicists working in the field of these techniques. The book may help physics researchers, computer scientists, and applied mathematicians to learn utilizing data science and machine learning in their research work. The book also explains how to integrate data science, data mining, ML and AI into designing innovative studies and experiments. Easy models, illustrations and simple explanations on machine learning and AI help researchers visualize, adapt and adopt the difficult-to-understand concepts.

**ISBN 9781032074016, Published November 29, 2021 by CRC Press.**

## OBITUARY: Dr. Udipi Madhvanath



The global medical physics community lost one of its founding fathers, Dr. Udipi Madhvanath, who was IOMP President from 199 -1994 and passed away on 9 December 2021 in his home in Bengaluru, India. He was 89 years old. He was the first President, IOMP outside Western Europe and North America.

Dr. Madhvanath assisted the initiation of the Dip. R.P. course in 1962. Most mainstream medical physicists in radiotherapy facilities in India since late 1960's to 1980's were the product of Dip RP course. M.Sc. medical physics courses were subsequently established in India.

In 1976, Dr. Madhvanath started the quarterly bulletin of AMPI (Association of Medical Physicists in India), being its first Editor. The Bulletin ultimately took the shape of the present Journal of Medical Physics (JMP). JMP is an indexed journal in PubMed and is one of the official publications of IOMP. He motivated the establishment of regional chapters of AMPI in India. He was founding member and President of AMPI and in 1986 he organised the Asian Regional Conference on Medical Physics.

Dr. Madhvanath was founding member of the IOMP Developing Countries Committee (DCC – now Professional Relations Committee PRC). Following his active work for the global development of medical physics in developing countries, he was elected in 1988 Vice-President (President-Elect) of IOMP at the World Congress in San Antonio, Texas.

In 1991, at the World Congress in Kyoto, Dr. Madhvanath became the 10th President of IOMP and he was Vice-President of IUPESM (the International Union for Physical and Engineering Sciences in Medicine) from 1994 to 1997. In this position he worked towards the recognition of the IUPESM as member of ICSU (International Council of Scientific Unions) – an activity necessary for the official recognition of our scientific fields.

Dr. Madhvanath was awarded Ramaih Naidu Oration in India and with Fellowship of AMPI. Asian Federation of Organizations for Medical Physics (AFOMP) awarded him with its Outstanding Medical Physicists Award. In 2020 IUPESM included Prof Udipi Madhvanath in its first List of Outstanding International Leaders of Medical Physics and Biomedical Engineering and bestowed upon him their inaugural Fellowship, what he was happy to accept at a special online ceremony.

Dr. Madhvanath is survived by a meritorious son Sriganesh Madhvanath who is Senior Director of Applied Research at eBay Inc in the USA. He has established a farewell blog which can be accessed at: <https://nandi.blog/2021/12/13/dr-udipi-madhvanath/>  
He was highly spiritually oriented and a devout follower of Sai Baba. He believed in helping others.

AFOMP expresses thanks to Dr. Madhvanath for his enormous contribution to the global development of medical physics! On behalf of the AFOMP Executive Committee we are sending deepest condolences to Dr. Madhvanath's family.

Prof. Slavik Tabakov, FIOMP, FIUPESM  
IOMP President (2015-2018); IUPESM Vice-President (2018-2022)

Prof. Arun Chougule, FIOMP  
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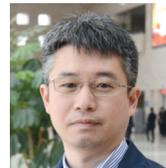
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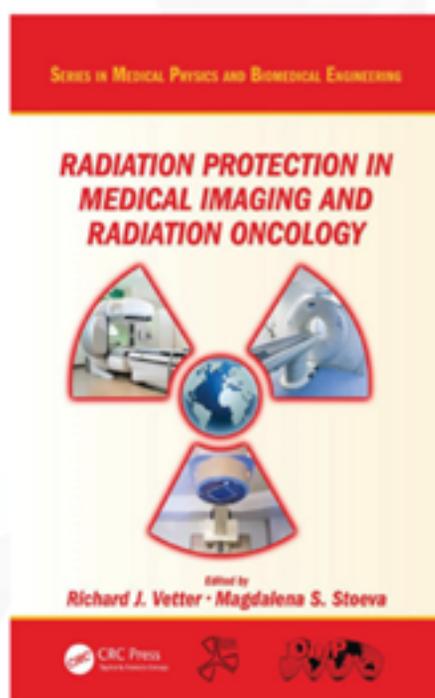
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