



AFOMP Newsletter

Asia-Oceania Federation of Organizations for Medical Physics

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AFOMP President's Message



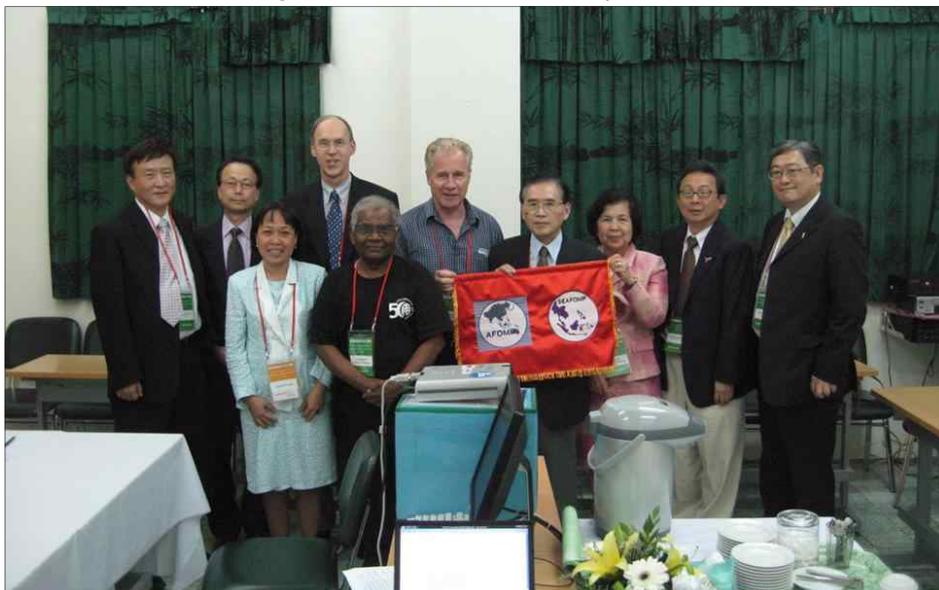
*Kiyonari Inamura, Ph.D
President, AFOMP*

This is the 2nd report for me as AFOMP President. Everything is still on the way to be completed, but members of AFOMP EXCOM discussed and tried to solve problems with enthusiasm. We have paid attention to establishment of constant financial basis, such as AFOMP dues collection and AFOMP Corporate Membership. We had difficult experiences, but we have had several contracts of Corporate Membership. The problem of AFOMP dues is now being solved.

1. AFOMP related events experienced.

7th AOCMP was held by our colleague

▼ At AFOMP Council Meeting at 8th AOCMP in Ho Chi Minh City, Vietnam



Professor Yi Min Hu in Huangshan from 23rd to 27th, August, 2007 in conjunction with Annual Meeting of Chinese Society of Medical Physics of which President is Professor Yi Min Hu.

Key members of AFOMP attended AFOMP to 25th Annual Meeting of ACMP (American College of Medical Physics) held in Seattle on May 3-6, 2008. They presented five papers and discussed key issues at the Symposium titled "International Medical Physicists Symposium: Certification of Experienced Clinical Medical Physicists - an International Cooperative Effort". Our AFOMP Secretary General: Professor Tae-Suk Suh served as the moderator. That was our first activity by which AFOMP could make appearance in an international theater. We collected the latest information on maintenance of certification and work value of medical physicist in USA that would be reflected to our future activities of AFOMP.

5th Korea-Japan Joint Meeting on Medical Physics was held in Jeju, Korea, on September 10-12, 2008, under the presidency of KSMP president Dr. Kwon, Soo

-II and JSMP president Dr. Tatsuaki Kanai. Even though it was rather local meeting, AFOMP President could explain role of AFOMP at the Symposium on Education and Training of Medical Physics. Also we discussed possibility of integration of domestic meetings such as K-J meeting into future AFOMP meetings.

We are now holding 8th AOCMP and 6th SEAFOMP in Cho Ray Hospital in Ho Chi Minh City on October 30-31, 2008 under the Presidency of Prof. Nguyen Troung Son MD. PhD, Director of Cho Ray Hospital. We would like to express sincere gratitude to Domestic Organizing Committee Member who has made every effort to hold successful meeting. Pre-congress training course on October 29th and post-congress workshop are being held. These are first training events under the name of AFOMP

I am very pleased to congratulate on foundation of Vietnam Association for Medical Physics (VAMP). The first meeting of VAMP is being held on October 29th, 2008.

2. Other AFOMP related activities

One of official journals of AFOMP, BIJ (Biomedical Imaging and Intervention Journal) published a paper on the survey

(Continued on page 2)

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Report of the Education and Training Committee

Kin Yin Cheung, Ph.D
ETC Chair, AFOMP

Past Activities of ETC during the period August 2007 to September 2008 can be summarized as follows.

Members of ETC have been updated as follow:

- Professor Arun Chougule, India
- Professor Soejoko Djarwani, Indonesia
- Professor John Drew, Australia
- Professor Yimin Hu, China
- Professor Kiyonari Inamura, Japan
- Professor Anchali Krisanachinda, Thailand
- Professor Chung-Chi Lee, Taiwan
- Dr. Rena Lee, Korea
- Dr. Donald Mclean, IAEA

- Professor Kwan Hoong Ng, Malaysia
- Dr. Madan M. Rehani, IAEA
- Professor Shinichi Wada, Japan

The Committee has review and endorsed the following IAEA documents:

- Quality assurance in screen-film mammography
- Quality assurance in digital mammography

Supported in organizing the International Medical Physicist Symposium on Certification of Experienced Clinical Medical Physicists – An International Cooperative Effort held as part of the ACMP Meeting in May 2008.

Set up the 8th AOCMP Travel Award Committee to design and implement a mechanism for granting travel support to

young AFOMP medical physicist to attend 8th AOCMP in Vietnam.

Contributed in the planning and organizing of the Symposium on Professional Training of Medical Physicists in AFOMP during 8th AOCMP & 6th SEACOMP held in Ho Chi Minh City, Vietnam.

Looking Forward to explore the possibility of establishing an international certification body for accreditation of medical physicists in AFOMP for the purpose of improve standard of practice. Initial actions are being initiated to strengthen the partnership with AAPM, ABR and ACMP and IOMP on this issue, including the setting up of a meeting during WC2009.

AFOMP President's Message

result of present situation of medical physics in AFOMP area. 1 That is most valuable report after three reports of the like in the past we carried out. Outline of the report is: (1) High workload of physicists with more than 500 patients per year per physicist. (2) Less than one ROMP (radiation oncology medical physicists) per two oncologists in average (3) One megavoltage treatment unit per medical physicist (4) A structured clinical training program is necessary. (5) The number of patients per physicist varies more significantly (250 to 800). (6) AFOMP has an important role to play by defining professional responsibilities and educational standard and by bringing physicists together and organizing conferences and workshops.

We had a progress of our AFOMP activities based on financial support from Corporate Members and grants from IOMP. The first education and training courses/workshops on topics on image quality assurance are being held in Ho Chi Minh city on October 29th 2008, the day before 8th AOCMP opens. This is the first training course under the name of AFOMP.

Also we have been making another effort of education and training, since AFOMP Subcommittee titled "Subcommittee for the support of an RCA project on Strengthening Medical Physics" was organized in 2002, and AFOMP and IAEA agreed on the cooperation/joint work. Items of cooperation are: (1) To

review, examine and endorse Tec Doc (technical documents) published by IAEA, (2) To share complementary roles for the IAEA and AFOMP each other, (3) Key roles for IAEA are: (i) Targeting global leveled training tools based on structured program. (ii) To train the trainers. (iii) To develop tools and portfolios for completion of core competencies. (4) Key roles for AFOMP are: (i) To concentrate at the local level with special emphasis on provincial sites, (ii) To train the trainees using equipment that they have, (iii) To increase the number of trainees and (iv) To work from the bot-

tom up.

Implementation guide and application form of RCA Training Program were sent to member countries. Organization of National Responsible Organization was recommended. The deadline is set on the end of 2008.

Reference

1. T Kron, KY Cheung, J Dai, et al. Medical physics aspects of cancer care in the Asia Pacific region Biomed Imaging Interv J 2008; 4(3):e33

▼ AFOMP President shown at the closing ceremony of 8th AOCMP



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A Report on The 5th Korea-Japan Joint Meeting on Medical Physics, Jeju, Korea

*Tae Suk Suh, Ph.D. Organizing Committee Chair
Youngyih Han, Ph.D Scientific Committee Chair*

Soo Il Kwon, President, The 5th Korea-Japan Joint Meeting on Medical Physics

The 5th Korea-Japan Joint Meeting on Medical Physics (The 5th KJMMP) was held during 10-12 September, 2008 in Jeju Hanwha Resort in Jeju, Korea. It was held in conjunction with the 37th Meeting of Korean Society of Medical Physics (KSMP) and the 96th Meeting of Japan Society of Medical Physics (JSMP). This Joint Meeting has been already held 4 times (two in Korea, two in Japan). The past four Joint Meetings were quite successful and have made an important role to promote research activities in medical physics, while offering a great opportunity of cultural exchange between two societies. The theme of 5th KJMMP was "New Horizon of Medical Physics". The meeting extended our visions on the medical physics by introducing new paradigm of future trend of medical physics which utilize interdisciplinary approaches such as image-guided therapy, and state of art imaging technique. This is truly reflected by the plenary session, and other symposiums.

▼ JeJu island pillar-shaped joint



▲ Banquet at congress venue (Hanwha resort)

Professor William Hendee from the University of Wisconsin, USA gave an outstanding plenary speech on "Entrepreneurship in Medical Physics". Another Plenary speaker Dr. Tatsuaki Kanai from NIRS, Japan also gave a nice presentation on "Progress in Carbon Radiotherapy". There were three excellent symposiums: "Advanced Technology in Radiation Therapy", "The State of Art Molecular Imaging Technology", and "Education and Training of Medical Physics". Two other leading scientists invited from USA, Dr. Daniel Low from Washington University and Dr. Jason Sohn from Case Western University also covered new idea on IGRT and adaptive RT in their lectures. The symposium on "Education and training of Medical Physics" was an important event of 5th KJMMP, and was moderated by Dr. William Hendee with five key panelists from Korea and Japan.



▲ Jeju island tour with invited speakers

The conference was attended by 205 participants. Abstracts considered within the scientific program were 68 oral presentations, 61 posters. There were 13 invited oral presentations in plenary or symposium. The young investigator's awards were provided to four young scientists from Korea and Japan through the competition in "Young Investigator's Presentation Session"

A series of social activities were arranged with the Welcome Reception held on a beautiful garden locating in the middle of Halla Mountain. Some tours were arranged to allow attendees to see the beautiful scenery and history in Jeju.

5th KJMMP provided a great opportunity for the attendees to update themselves on the current trends in various fields of medical physics by exchanging scientific and technological information as well as strengthening friendship between Korean and Japanese medical physicists. In addition to the academic aspects of the Congress, Jeju offers unique experiences for all the members with its rich heritages and tradition lifestyle.



Kwan-Hoong Ng, Ph.D
PDC Chair, AFOMP

The PDC has been drafting the "AFOMP Policy Statement No.2: Recommended Clinical Radiation Oncology Medical Physicist Staffing Levels in AFOMP Countries". The task is headed by Howell Round and Khoon Tay Yak. KH Ng will present the progress report on behalf of the PDC during the 8th AOCMP and 6th SEACOMP, Ho Chi Minh City, Vietnam, Oct 30-31, 2008. We target to have the final draft ready for circulation by mid-2009.

The PDC has also collaborated with Tomas Kron and the Biomedical Imaging and Intervention Journal www.bijj.org resulting in the publication of a review paper "Medical physics aspects of cancer care in the Asia Pacific region" - T Kron, KY Cheung, J Dai, P Ravindran, D Soejoko, K Inamura, JY Song, L Bold, R Srivastava, L Rodriguez, TJ Wong, A Kumara, CC Lee, A Krisanachinda, XC Nguyen, KH Ng. *Biomed Imaging Interv J* 2008; 4(3):e33.

This represents a significant landmark in regional cooperation and for the first time we have concrete published data on the status of medical physics in Asia and Oceania.

The chairman would like to thank all the members for their cooperation and contribution towards the success of the PDC.

- Prof. Kwan-Hoong Ng MYS
- Dr. Kin-yin Cheung HKG
- Assoc. Prof. Youngyih Han KOR
- Prof. Yaoxiong Huang CHN
- Dr. Nobuyuki Kanematsu JPN
- Prof. Hee-Joung Kim KOR
- Assoc. Prof. Anchali Krisanachinda THA
- Prof. Ho-Ling Anthony Liu TWA
- Dr. Howell Round NZL
- Mr. Yak Khoon Tay SGP

Progress of AFOMP Policy Statement No. 2 "Recommended Clinical Radiation Oncology Medical Physicist Staffing Levels in AFOMP Countries"

Howell Round, Yak Koon Tay and Kwan-Hoong Ng

The AFOMP Professional Development Committee (PDC) has been working on a number of important tasks. Among them are drafting of a set of policy statements which give recommendations and guide-

lines on issues such as the definitions on the roles and responsibility of medical physicists, their professional and quality standards, and the standard and structure of education and training of medical physicists. This policy statement, which is the second of a series of documents outlines the official views of AFOMP on recommended clinical medical physicist staffing levels in radiation oncology departments. It aims to serve as a guideline or reference document for AFOMP organizations.

The philosophy and rationale in defining suitable radiation oncology medical physicist staffing levels will be explained.

Proposed recommended staffing guidelines include:

- Every radiation oncology department must employ at least one qualified clinical radiation oncology medical physicist as specified in AFOMP Policy Number 1.
- The number of qualified medical physicists in a department must generally exceed the number of unqualified clinical radiation oncology medical physicist being trained within the department.
- Time must be provided for continuing professional development, teaching and training.
- Senior physicists must be provided with sufficient time to train and mentor trainee/junior/registrar/resident physicists.

Currently activity is focused on developing EFT-based guideline for departments.

Medical physics aspects of cancer care in the Asia Pacific region

T Kron, KY Cheung, J Dai, P Ravindran, D Soejoko, K Inamura, JY Song, L Bold, R Srivastava, L Rodriguez, TJ Wong, A Kumara, CC Lee, A Krisanachinda, XC Nguyen, KH Ng

Medical physics plays an essential role in modern medicine. This is particularly evident in cancer care where medical physicists are involved in radiotherapy treatment planning and quality assurance as well as in imaging and radiation protection. Due to the large variety of tasks and interests, medical physics is often subdivided into specialties such as radiology, nuclear medicine and radiation oncology medical physics. However,

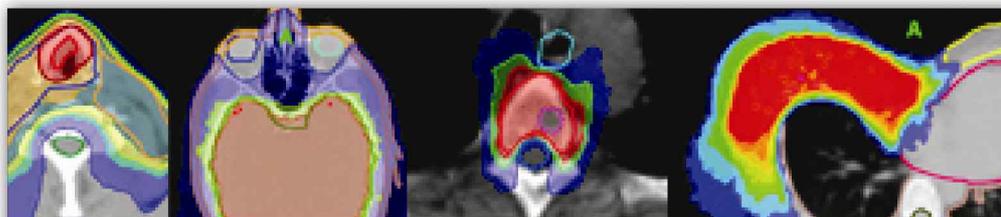
even within their specialty, the role of radiation oncology medical physicists (ROMPs) is diverse and varies between different societies. Therefore, a questionnaire was sent to leading medical physicists in most countries/areas in the Asia/Pacific region to determine the education, role and status of medical physicists.

Answers were received from 17 countries/areas representing nearly 2800 radiation oncology medical physicists. There was general agreement that medical physicists should have both academic (typically at MSc level) and clinical (typically at least 2 years) training. ROMPs spent most of their time working in radiotherapy treatment planning (average 17 hours per week); however radiation protection and engineering tasks were also common. Typically, only physicists in large centres are involved in research and teaching. Most respondents thought that the workload of physicists was high, with more than 500 patients per year per physicist, less than one ROMP per two oncologists being the norm, and on average, one megavoltage treatment unit per medical physicist.

There was also a clear indication of increased complexity of technology in the region with many countries/areas reporting to have installed helical tomotherapy, IMRT (Intensity Modulated Radiation Therapy), IGRT (Image Guided Radiation Therapy), Gamma-knife and Cyber-knife units. This and the continued workload from brachytherapy will require growing expertise and numbers in the medical physics workforce. Addressing these needs will be an important challenge for the future. © 2008 Biomedical Imaging and Intervention Journal.

URL for the paper:
<http://www.bijj.org/2008/3/e33/>

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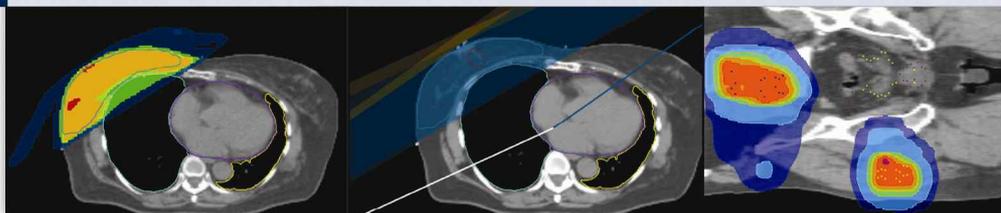
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Nurturing Collaborations in Medical Physics

Phan Sy An

Bach Mai Hospital, Hanoi Medical University, Hanoi, Vietnam

Hoang Hoa Hai, Nguyen Van Hoa

Choray Hospital, Ho Chi Minh City, Vietnam

Kwan-Hoong Ng

University of Malaya, Kuala Lumpur, Malaysia

Nurturing collaborations in medical physics was hosted by Choray Hospital in co-operation with the Viet Nam Association for Medical Physics (VAMP), Viet Nam Society of Radiology and Nuclear Medicine (VSRNM), and Radiology Society of Ho Chi Minh City and in association with Asia-Oceania Federation of Organizations for Medical Physics (AFOMP) and South East Asia Federation of Organizations for Medical Physics (SEAFOMP).

This was the first time that the AOCMP and SEACOMP were held in Vietnam and the local organisers, led by Dr. Nguyen Trung Son and Prof. Phan Sy An, are to be congratulated for their hard work in hosting such a successful meeting despite the limited experience and resources. Both Dr. Hoang Hoa Hai and Mr. Nguyen Van Hoa deserve the greatest appreciation for they were the engines that kept the meeting running smoothly. The president of AFOMP, Prof. Kiyo Inamura and president of SEAFOMP, Assoc. Prof. Anchali Krisanachinda have also been working closely for this joint meeting.

The largest city in Vietnam, Ho Chi Minh City (formerly known as Saigon) sits on the banks of the Saigon River and is the economic hub of the country. This lively metropolis is packed with temples, grand boulevards, markets, cafes and motorbikes (or scooters). Ho Chi Minh City has a rich history. It was under French rule from 1859 until 1954. The city was heavily influenced by the French during the period of colonial occupation, and a number of classical European-style buildings in the city reflect this. For a time, Saigon was even known as “Paris of the Orient”.

It is within this historical city that the meeting was held, at the century-old Choray Hospital. Commuting to the Choray Hospital is a challenge for all, in a city of 8 million people, intertwined with 3 million motorbikes on the roads. The traffic noise is relentless and overwhelming – this is the sound of Ho Chi Minh City. The real test of one’s nerve is walking across the flow of traffic – the motorcyclists and pedestrians seem to be well-versed in the physics of relative velocity, for accidents are few and far

8th ASIA-OCEANIA CONGRESS OF MEDICAL PHYSICS and 6th SOUTH EAST ASIAN CONGRESS OF MEDICAL PHYSICS, 29 Oct - 1 Nov 2008, Ho Chi Minh City, Vietnam

between. The secret is to move slowly, confidently and steadily. If you lose your nerve while crossing, then you can cause a horrendous traffic foul-up.

As chaos reigned in the streets, the congress went on smoothly in Choray Hospital. About 305 participants from 20 countries attended the congress. 27 invited speakers delivered 23 plenary lectures as well as pre- and post-congress courses and workshops. A total of 51 oral and 31 poster presentations were given. A variety of topics were discussed, ranging from the most advanced topics such as proton therapy, image-guided radiotherapy, functional MRI to the more standard ones such as dose distribution, simulation, dosimetry, quality assurance, etc.

At the opening ceremony, the organising chairman Dr. Nguyen remarked that “**this** scientific event is expected to promote the co-operation, mutual understanding, share the experiences and strengthen medical physics.” A special award was also given to Dr. KY Cheung, the first president of AFOMP, in recognition of his dedication and contribution to laying the foundation for AFOMP.



▲ Congress picture taken at the main hall, Cho Ray Hospital, Ho Chi Minh City

Nurturing Collaborations in Medical Physics



▲ Boat trip along the Mekong Delta

The third John Cameron Memorial Lecture entitled “Frontiers of Medical Physics” was then delivered by Prof. Barry Allen. This series of lectures has always been the highlight of the SEACOMP.

Two pre-congress activities were organised: A workshop on “The use of Image-J and MS-Excel for CT Performance Study” led by Assoc. Prof. Anchali Krisanachinda and Prof. Katsumi Tsujikoka; as well as a refresher course on “Digital Imaging” led by Prof. Kwan-Hoong Ng and the faculty consisting of Prof. Ho-Ling Anthony Liu, Assist. Prof. Napapong Pongnapang and Prof. Hee-Joung Kim.

Two symposia, namely Professional Development, and Education and Training, witnessed active audience participation leading to sessions being extended. Topics such as certification, competency training, and manpower requirements were hotly debated.

A post-congress workshop on “Palliative Radiotherapy” was organised by Professor Barry J. Allen and some 20 lectures were delivered discussing the appropri-

▼ City hall of Ho Chi Minh City
(Courtesy of Jeong-Hoon Park)



▲ Awardees of the Young Investigators Awards with the Judging committee and organizers

ateness of the use of high technology for developing countries.

The young investigator award was instituted to encourage students to embark on research and to promote the profession of medical physics. The judging committee headed by Dr. KY Cheung remarked that the overall quality was excellent and the delivery was outstanding.

The best oral presentation for radiotherapy physics went to Vincent Ung (Malaysia/ Australia), best oral presentation for imaging physics went to Nguyen Thai Ha (Vietnam), and best poster presentation went to J Chang (Korea)

The outstanding presentation for radiotherapy physics was awarded to Taweap Sanghangthum (Thailand); outstanding presentation for imaging physics was given to Liew YW (Malaysia), and outstanding poster went to Kazue Mizuno (Japan).

The official banquet was held at the Van Thanh Park where some 300 participants and guests were not only served the best of Vietnamese cuisine but also entertained with traditional Vietnamese dances and songs.

On the whole, the congress was a success and participants benefited greatly from the educational and networking opportunities offered. This event was also a great boast to the newly founded Viet Nam

▼ Scene of Ho Chi Minh City
(Courtesy of Jeong-Hoon Park)



Association for Medical Physics and regional collaboration.

Finally, the organisers would like to register their thanks to Elekta, Siemens, Unfors, Varian and Panacea for sponsoring and supporting the congress.

Readers who are interested could download the edited abstracts from the Biomedical Imaging and Intervention Journal

<http://www.bijj.org/2008/4/e43>

Digital recording of lectures is available:

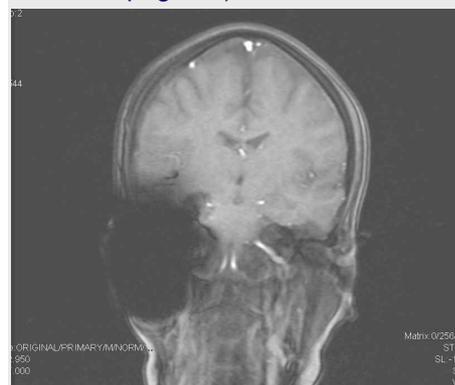
<http://www.bijj.org/biomedical-imaging-intervention-journal-resources.asp>

Invited Speakers

A Krisanachinda	Barry J Allen
David Causer	Donald McLean
Hee-Joung Kim	Ho-Ling A Liu
Huynh Quang Linh	John H LeVan
Kin-Yin Cheung	Kiyonari Inamura
Kwan-Hoong Ng	Milton Woo
N Suntharalingam	Nguyen Van Hoa
Nguyen Xuan Ku	Phan Sy An
Tae Suk Suh	Tatsuaki Kanai
Yao-Xiong Huang	

AFOMP Quiz #4

Do you know what caused the black region that appeared in the MR image of the head? (The answer is found on page 14)



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Design and Development of a Daily Radiation Beam Analyzer for Linear Accelerator Machine

Jessadapong Phumruamjai

Medical Physics Master Degree Program, Department of Radiology, Chiang Mai University, Thailand

Nowadays, a quality control programs of most radiotherapy cancer treatment centers in Thailand are performed through QA check devices which are not only expensive but also difficult to maintain its performance due to the lack of skillful personnel and detailed service manual. To reduce the budget and increase the strength in innovative physics research, the Daily Radiation Beam Analyzer for linear accelerator, CMU-1, has been designed and developed. This type of QA device both commercial and in house were intensively studied [1-7] before designing the prototype. Since it will be used by radiotherapist for daily QA check; output consistency, beam flatness, symmetry and energy index, it has to be uncomplicated and easy to set up.

The CMU-1 consists of 10 parallel-plate ionization chambers (PPIC) made of standard printed circuit board. The PPICs have two electrodes with a diameter of 1.3 cm. and 0.66 cc. sensitive volume. The anode is directly connected to the front-end circuit of a mainboard. The electric field is obtained from a high voltage of negative 300V applied to the cathode. The signal from each PPIC is sent to individual channel in the mainboard which composes of the current to voltage converter circuit, amplifier circuit, integrator circuit, buffer circuit, high voltage circuit, digital circuit, control circuit and display circuit. The digital circuit is interfaced with control panel switches and display unit to show the result of data acquisition. The processing system is included in this device so that the results can be simultaneously displayed on LCD monitor and red LEDs. The daily beam data can be recorded and stored in its memory until transferred to PC for permanent record.

After fabrication, the reliable tests of the PPICs and the data processing system were performed. The developed data analysis program of the device was verified. Finally, the CMU-1 was test for its reliability under 6 MV and 10 MV linear accelerator. The results were compared to that of standard quality assurance equipment. Following AAPM standardization(8) the designed

Daily Radiation Beam Analyzer is reliable; moreover, it is uncomplicated and easy to setup that allows the radiotherapist to quickly complete daily QA procedure.

In my opinion, it is essential for Thailand and other developing countries to perform this kind of research work in order to reduce the cost and maintenance problems of such systems as well as to increase the strength in innovative physics research.

Acknowledgement

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Recombination in Farmer-type Ionization Chambers

Frances Caroline M. Lopez

Graduate School, University of Santo Tomas,
Manila Philippines

Physics Department, De La Salle University
Manila, Philippines

At the present day, medical linear accelerators are the core equipment of many radiation therapy departments in the combat with many diseases like cancer. Majority of the patients referred to a radiation therapy department are treated with linear accelerators for at least part of their treatment. These machines have significant roles in cancer management in general as they contribute to the therapeutic success in treatment of many tumors.

Beam calibration of these accelerators lies at a critical point in the overall chain of accuracy in radiotherapy, hence the impor-

tance of consistency with our reference dosimetry. The clinical beam calibration must be maintained, unambiguously specified and may be reproduced over time. Several correction factors are applied in performing an output calibration of a linear accelerator in radiation therapy, one of them is ion recombination factor (ks). This parameter is a measure of a chamber's efficiency in quantifying charges produced in the instrument's active volume when exposed to radiation.

The theory of recombination in ion ionization chambers is very well established and a number of studies are scattered in the literature. Boag (1996, 1980, 1950) is given the most credit with his extensive investigations on this dosimetric parameter. His fundamental theory states that for a pulsed beam, the inverse of the collecting voltage is a function of the inverse current. These two parameters must exhibit a linear relationship. Present abso-

(Continued on page 8)

lute dosimetry protocols (IAEA TRS 398 and AAPM TG 51) recommend simplified techniques of ion recombination factors via the two-voltage technique. With pulsed photon beams, ion recombination factor is determined using ratios of readings from two voltage settings. Usually the first voltage setting is greater by a factor of three than the second.

The aim of the study is to characterize and compare the ion recombination behavior of a Farmer-type chamber via three protocols: a) the Multi-Voltage technique (MVT), where linearity of the inverse of the charge measurement to the reciprocal of the applied voltage were evaluated and used. The intercept of such function is an approximation of the saturation current caused by radiation; b) the Two-Voltage technique (TVT), where ion recombination factor values were calculated based on voltage ratios, VR, following IAEA TRS 398 recommendations; and c) by way of dose per pulse properties (DPP) where the factors were noted from the actual doses received by the ionization chamber per pulse.

A 0.65 cc FC-65G SN 295 Farmer-type ionization chamber previously known as IC-70, from Scanditronix was used as detector for this research. It has a graphite wall material (wall thickness = 0.073 g/cm³ = 0.4 mm) and an Aluminum central electrode. The cavity radius measures 3.1 mm and has an active length of 23.1 mm. The inner electrode's diameter is 1 mm with an effective electrode separation, d_{eff}, of 2.9 mm. The chamber was exposed to 6MV pulsed photon beams using a SL 75-5 linear accelerator at a constant field size 10 cm x 10 cm and SSD = 100 cm. Measurements were acquired at +50 V to +400V at a 50-V increment at measurement depths 3 cm, 5 cm, 7 cm, 10 cm and 12 cm in water phantom using 240 Hz, 120 Hz, and 60 Hz pulse repetition frequency (PRF) settings.

Poor linearity was seen on FC 65-G SN 295's inverse response as a function of the collecting voltage at all voltage setting and depths considered in this study. Results noted were similar to Derikum and Roos's (1993) findings on non-linearity response for several ionization chambers exposed to pulsed beams. The difference of k_s means at depth, voltage setting and pulse repetition frequency was evaluated using Multifactor Analysis of Variance with interaction effects. At 95% confidence interval, ion recombination factor as a function of collecting voltage, chamber depth position and PRF setting all revealed significant differences among its saturation correction factor means.

In general, the saturation behavior of the ionization chamber revealed excellent results using TVT. Voltage ratios, VR, equal to 2, 2.5, 3, 3.5, 4, 5, 6 and 8 were evaluated. The collection efficiency of the ionization chamber appears to be approaching 99% or even higher except for VR=8. The primary and secondary bias voltages were +400V and +50V respectively. At this ratio, ion recombination factor were found to be way beyond clinical tolerance levels of around 18% uncertainty. One may conjecture that the primary voltage used is near the saturation region so that charge multiplication starts to take effect. The secondary voltage is too low so that liberated ions start to recombine in the low force field environment. The composite effect of the upper and lower bound collecting potentials showed very high magnitudes of uncertainties, and this has been consistent for all three PRF settings considered.

The dose per pulse to the sensitive part of the ionization chamber cannot be varied directly from the accelerator used in the study. The distance of the chamber relative to the surface of the water

phantom was varied instead. Ion recombination was computed from

$$k_s = 1 + \frac{\mu d^2}{2VV'} \frac{D_w / N_{D,w}}{k_{Q,Q_0} N}$$

where $\mu=3.02 \times 10^{10} \text{ VmC}^{-1}$, d is the effective electrode separation, V is the collecting voltage and V' is the chamber active volume. N_{D,w} is the system calibration factor traceable to the Philippines's Department of Health Secondary Standard Dosimetry Laboratory while k_{Q,Q₀} is beam quality correction factor. The dose to water per pulse is equal to. Ion recombination factor for this chamber as a function of dose per pulse revealed linear functions with excellent coefficient of variation equal to unity.

In conclusion, ion recombination factor for pulsed photon beams for FC 65-G SN295 with its pulse per pulse dependence revealed a negative deviation from Boag's theory and significantly different at 95% CI. On a similar note, k_s from TVT revealed a negative deviation compared to multi-voltage technique. Without linearity check as described by Boag's Theory on ion saturation and recombination, reliance to two voltage technique can give inconsistent results if one (or both) of the collecting voltages chosen is higher than the threshold or too low that ion transit time becomes extremely long.

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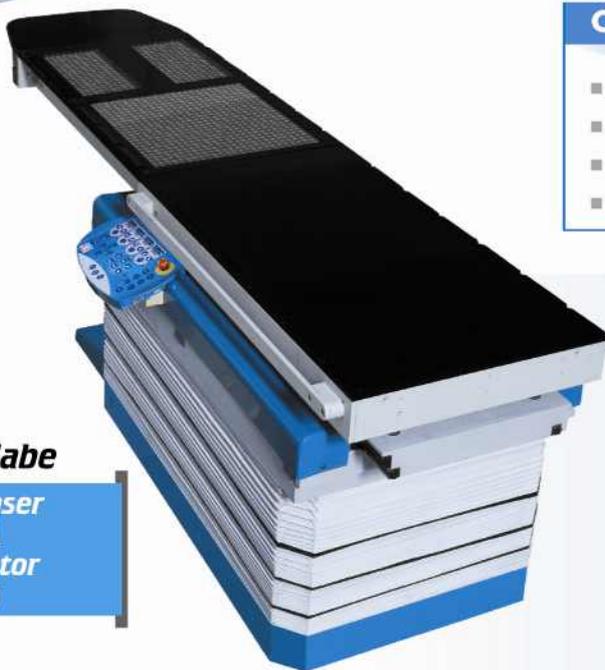
** taken from Validation of Ion Recombination Factor for Farmer-type Ionization Chamber in 6MV Pulsed Photon Beams via TVT and MVT. Proceedings, 6th South East Asian Congress in Medical Physics and 8th Asia-Oceania Congress in Medical Physics 30-31 October 2008. Ho Ch Minh City, Vietnam.

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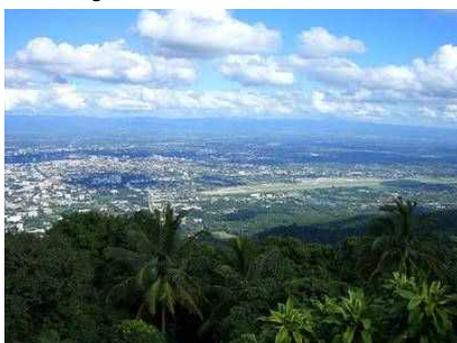
Thailand Holds 9th AOCMP and 7th SEACOMP in Chiang Mai

At the AFOMP council meeting held in Ho Chi Minh City, Vietnam, Chiang Mai, Thailand was selected to host 9th AOCMP and 7th SEACOMP.

Chiang Mai is the largest and most culturally significant city in northern Thailand, and is located about 700 km (435 mi) north of Bangkok. In recent years, Chiang Mai has become an increasingly modern city and it has many attractions for the thousands of foreign visitors who come each year.

The official website is available at: <http://www.tmps.or.th/9AOCMP/>

▼ Chaing Mai Overview



Congress period	22-24 October, 2009
Venue	The Empress Convention Center, Chiang Mai, Thailand
Organized by	Thai Medical Physicist Society Dr. Anchali Krisanachinda
In association with	Asia-Oceania Federation of Organization for Medical Physics South-East Asian Federation of Organization for Medical Physics
Accommodation facilities	The Empress Chiangmai Hotel: 1400-1900 Thai Baht (USD 45-60) The Park Chiang Mai Hotel: 1000-1500 Baht (USD 32-47) Down Town Inn: 1000-1500 Baht (USD 32-47)
Social events	Opening ceremony / Banquet / Closing ceremony / Congress tour
Transportation	From airport to official hotel can be arranged
Local Organizing Committee	Dr. Anchali Krisanachinda : Chairperson Mr. Surat Vinijsorn : Deputy-Chair Ms. Sivalee Suriyapee : Chair, Scientific Committee Dr. Puangpen Tangboonduangjit : Public relations Ms. Nonglak Vilasdechanon : Registration Dr. Somsak Wanwilairat : Scientific Exhibition Dr. Nisa Chawapun : Social Events Mr. Supoj Ua-Apisitwong : Audiovisual Mr. Tanawat Sontrapornpol : Treasurer Mr. Panya Pasawang : Congress Secretary Dr. Napapong Pongnapang : Publication

Invitation of 9th ISRS Meeting in Seoul, Korea

Dong-Gyu Kim, M.D., Chairman
Il-Han Kim, M.D., Co-Chairman
Tae-Suk Suh, Ph.D., Co-Chairman

It is a great pleasure to welcome you to Seoul, Korea for the 9th Congress of the International Stereotactic Radiosurgery Society. The organizing committee will provide scientific opportunities to confront the cutting edge of radiosurgery and social opportunities to meet your sincere friends. During the congress, you can join various programs such as special lectures, plenary sessions, breakfast seminars, general sessions, and poster presentations. Substantial scientific works on clinical studies and basic research will be presented to offer you forums to communicate with your con-

▼ Important Dates

March 1st	Early bird registration
March	Detailed scientific program available (online)
April 1st	Hotel bookings deadline (subject to availability)
June 1st	Late registration deadline
June 7-11	ISRS Congress in Seoul



ISRS 2009 Seoul, South Korea
9th Biennial Congress and Exhibition of the
International Stereotactic Radiosurgery Society

June 7-11, 2009



▲ Night or Day - Seoul is always busy

temporary co-workers. Neurosurgeons, radiation oncologists, medical physicists, technologists, and nurses will have the chance to see what and how other people are doing in their respective fields.

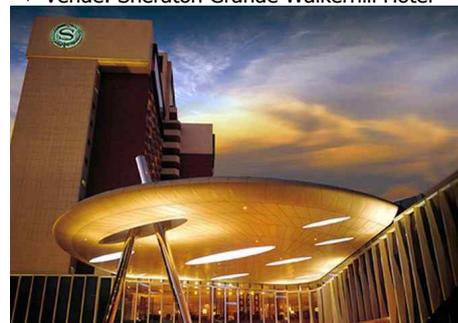
Korea is a dynamic and diversified country, perfect for welcoming all of you attending the congress. In Seoul, you will see the co-existence and fusion of a spearhead of modern technology and five-thousand years old historic traditions. Palaces, museums, and folk villages full of oriental culture will welcome you.

Feeling the energy that is leading the recent change and development within the country will be an exciting experience for you and your family. Touching Korean heritage all around Seoul and Korea will be a fresh experience to encourage your different scientific desires.

It is our hope that your stay in Seoul will be a pleasant and rewarding experience both on a professional and personal level.

Welcome to Seoul!

▼ Venue: Sheraton Grande Walkerhill Hotel



The 1st Asia-Oceania Radiosurgery Physics Meeting in conjunction with 9th ISRS Meeting in Seoul, Korea

Tae-Suk Suh, Ph.D.
Organizing Chair

Dong-Joon Lee, Ph.D.
President, KSMRP

We are greatly honored and pleased to welcome you all here for the 1st Asia-Oceania Radiosurgery Physics Meeting (1st AORPM) in conjunction with the 9th Biennial Congress and Exhibition of the International Stereotactic Radiosurgery Society (ISRS2009 Seoul).

The 1st AORPM will offer an opportunity of cultural interchange among Asia-Oceania countries and promote research activities in medical physics in radiosurgery. This meeting comprises three parts: scientific interactions, the current and future roles of Asia-Oceania organization of physicists, and cultural exchange.

This Meeting under the theme of "Recent Advances of Radiosurgery Technology"

"Recent Advances of Radiosurgery Technology"

will provide a great opportunity for the attendees to update themselves on the current trends in the field of medical physics with world-wide distinguished speakers by exchanging scientific and technological information as well as strengthening friendship among our members. Our special session on education and training in medical physics address the needs and activities of physicists in many Asian countries, and the current and future roles of Asia-Oceania Organization in Physicists.

We are also to have a cooperative program "the Nuclear R&D Project Exhibition" with all the scientists who participated in the Nuclear R&D Program associating with medical physics, which were fully supported by the Korean Government (Ministry of Education,

Science and Technology).

This is the 1st time to hold the Radiosurgery Physics Meeting in Asia. It is hoped that the meeting provides an informative and stimulating discussion essential for further advancement of medical physics.

Once again, we welcome you all and wish you all very pleasant and memorable stay in Seoul.

▶ Date: June 6, 2009

▶ Venue: Sheraton Grande Walkerhill

▶ Invited speakers

Frank Bova	Raymond Wu
Kiyonari Inamuri	Yimin Hu
Chen-Shou Chui	Sonja Dieterich
Siyong Kim	Peter Maxim
Soon-Nyung Huh	Sung-Yong Park
Rena Lee	

AFOMP NEWS

IOMP Travel Assistance Program for WC2009 Attendance

Goals of the Program

To assist medical physicists from IOMP member organizations in developing countries to participate in medical physics scientific, educational and professional activities at the international level and make them more effective in promoting the advancement of medical physics in their own countries.

To foster international co-operation in the field of medical physics between all member countries of the IOMP.

The Awards

Six travel awards will be made to medical physicists working and residing in developing countries to assist them to attend the World Congress on Medical Physics and Biomedical Engineering to be held in Munich, Germany during 7-12 September 2009.

A fixed award of \$1,500 shall be made to each successful applicant to cover the registration cost and to subsidize travel expenses. The money will be handed, or electronically transferred, to the successful candidate on arrival at WC2009.

Application Guidelines for Funding

All applications for financial support shall be made through the respective country's medical physics association/society, which shall be a paid up member organization of IOMP. A letter of recommendation from an official representative of the association/society is recommended.

The applicant must be a medical physicist from a member organization of IOMP. Only one applicant from a specific country can be funded. When more than one person from a country requests support, the country's medical physics association/society will decide which application should be sent to the IOMP.

A specific applicant can only receive funding once. The applicant must personally present a paper or poster which he/she is a first author.

After the congress all successful applicants (awardees) shall within two months each submit a short report to the IOMP Secretary-General on what was learnt at the congress and how they intend to apply this in their own countries. The awardees shall also submit a copy of their reports to their respective medical physics associations/societies.

Application and Procedure

Duly completed application form and abstract must reach Dr. Kin Yin Cheung, Chairman of IOMP Professional Relations Committee, at email kycheung@ha.org.hk on or before April 30, 2009.

Application form is available on AFOMP website <http://www.afomp.org>

WC2009 Paper and Symposium

The final deadline for paper submission is prolonged to April 15, 2009.

AFOMP is holding Symposium on "Education and Training of Medical Physics in the AFOMP area" at Theme 12 / Track 1 of scientific program.

Answer to AFOMP Quiz #4

This artefact was caused by a tiny battery being deep seated in the external auditory canal of the right ear. This object was lodged *in situ* for many years without the patient realising its presence.

Calendar of Events

7-11 February 2009

Winter Institute of Medical Physics;
Summit Country, Co USA

<http://www.gowimp.org>

7-12 February 2009

SPIE Medical Imaging Conference; Orlando, FL, USA

<http://spie.org/medical-imaging.xml>

7-13 February 2009

Medical Physics, Radiation Protection,
and Radiobiology; Jaipur, India

Email: arunchougule11@gmail.com

24-28 March 2009

Annual Congress & Workshop of the
South African Association for Physicists
in Medicine and Biology (SAAPMB);
Bloemfontein, South Africa

<http://www.saapmb2009congress.co.za>

27-29 April 2009

IAEA Int'l Conference on Advances in
Radiation Oncology (ICARO); Vienna,
Austria

<http://www-pub.iaea.org/MTCD/Meetings/Announcements.asp?ConfID=35265>

2-5 May 2009

American College of Medical Physics
Annual Meeting; Virginia Beach, VA
USA

<http://www.acmp.org>

17-20 May 2009

2nd ACRR - Asian Congress of Radiation
Research; COEX, Seoul, Korea

<http://www.acrr2009.org>

31 May - 2 June 2009

American Brachytherapy Society Annual
Meeting; Toronto, Canada

<http://www.americanbrachytherapy.org/meetings/index.cfm>

6 June 2009

1st Asia-Oceania Radiosurgery Physics
Meeting in conjunction with ISRS
2009; Seoul, Korea

email: suhsanta@catholic.ac.kr
bhead@catholic.a.c.kr

7-11 June 2009

ISRS 2009, 9th Biennial Congress and
Exhibition of the International Stereotactic
Radiosurgery Society; Seoul, Korea

Venue: Sheraton Grande Walkerhill
<http://www.isrs2009.org>

21-25 June 2009

AAPM Summer School; Colorado
Springs, CO USA

Clinical Dosimetry Measurements in
Radiotherapy

<http://www.aapm.org/meetings>

23-27 June 2009

CARS 2009 - Computer Assisted Radiology
and Surgery; Berlin, Germany

23rd Int'l Congress and Exhibition; Joint
Congress of CAR / ISCAS / CAD /
CMI / EuroPACS / CURAC

<http://www.cars-int.org>

26-30 July 2009

American Association of Physicists in
Medicine (AAPM) Annual Meeting;
Anaheim, CA USA

<http://www.aapm.org/meetings/>

7-12 September 2009

WC 2009 - World Congress on Medical
Physics and Biomedical Engineering;
Munich, Germany

Abstract submission: 15 April, 2009

<http://www.wc2009.org>

22-24 October 2009

9th AOCMP & 7th SEACOMP; Chiang
Mai, Thailand

<http://www.tmps.or.th/9AOCMP/>

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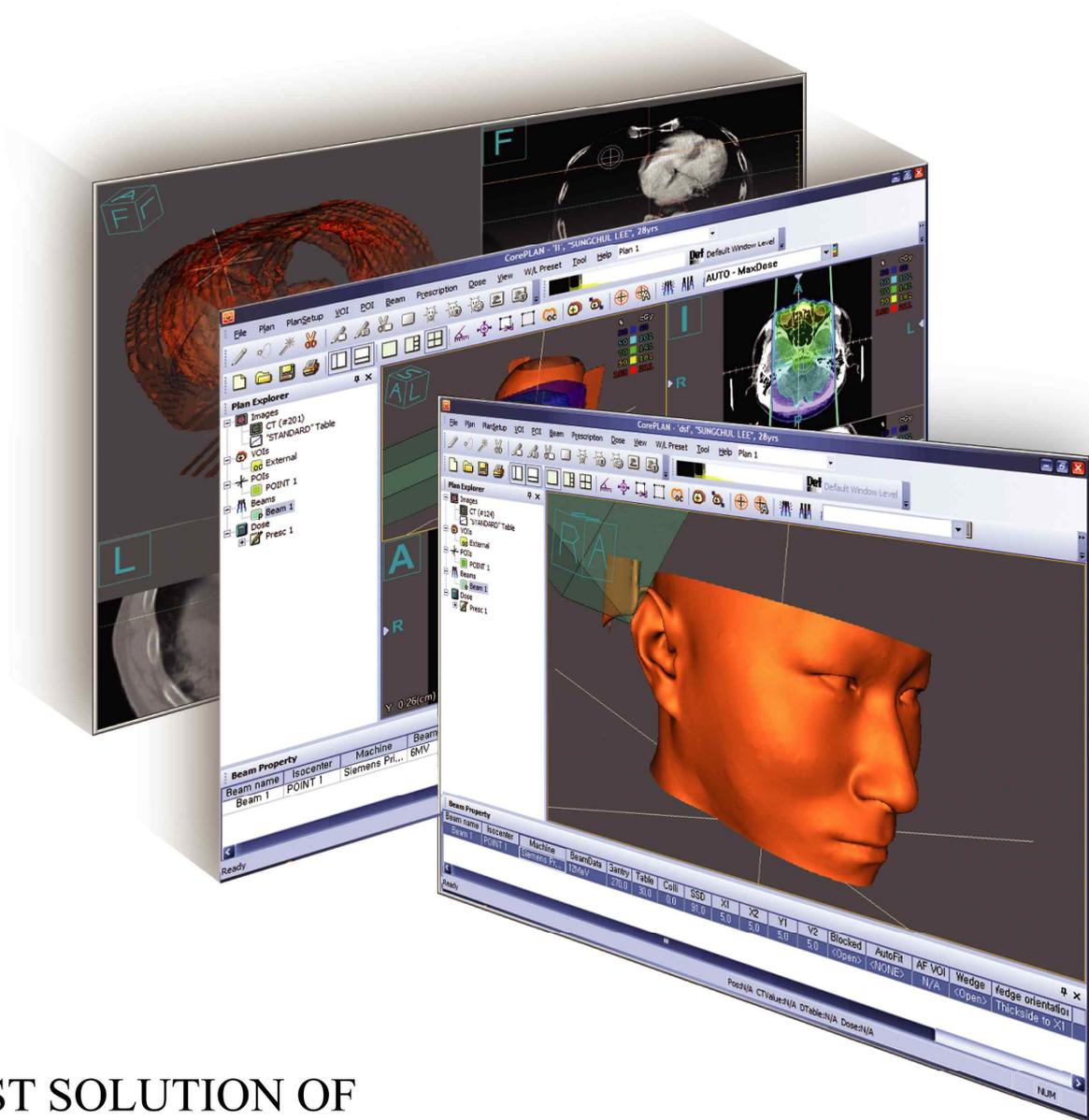
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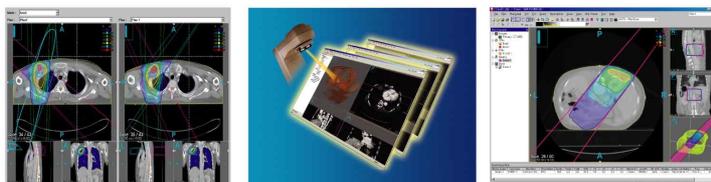




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