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学会報告

ICMP 2013 The International Conference on Medical Physics 参加報告 (1)

櫻井　勇介

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博士前期課程1年

この度、イギリスのブライトンで開催されたThe 20th International Conference on Medical Physics (ICMP) September 1–4, 2013に、日本医学物理学会から研究成果報告奨励金による援助のもと参加してまいりました。

この学会のテーマは“New Horizons—Global and Scientific”であり、さまざまな領域での新しい技術、知見に基づいた研究が数多く報告されていました。そして奇しくも今年は、International Organization for Medical Physics (IOMP)の設立50周年記念大会も合わせて催され、過去50年にわたる歴代の研究者を讃える展示がされておりました。その中には、日本医学物理学会の田中栄一先生、河内清光先生も選出されており、大きな感動を覚えました。

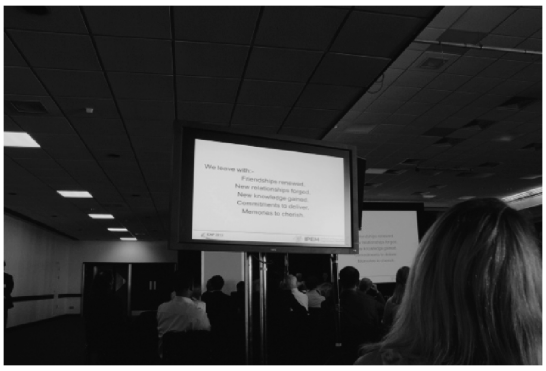
イギリスの南端、ブライトンというリゾート地で行われた本学会は、終始天候にも恵まれ、美しいビーチを目の前にしながら各分野の専門家が昼食や夕食の席でも活発な意見交流をしていました。

私はポスターのみの発表で、発表時間は設けられておらず、どのようにすれば良いのかと不安を抱えての学会スタートでしたが、予想以上に多くの方が積極的に質問をしてくださり、退屈な時間はありませんでした。最初は慣れない英語に苦労していましたが、皆さんが真剣に耳を傾けてくださり、次第に自信をもって説明ができるようになりました。今回私は“Improving the Monte Carlo simulation accuracy for radioactivation in proton therapy with anti-symmetrized molecular dynamics”と題して研究発表を行いました。本報告は、昨年度に学部卒業研究として取り組んでいたもので、日本学術振興会先端研究拠点事業の支援のもとで行ったものです。東北大学の小野章先生の核反応モデルを利用し、陽子線照射時の放射化をシミュレートするための核反応モデルの高精度化を検討したもので、その核反応モデル(AMD: Anti-symmetrized Molecular Dynamics)を用いて、医療領域で使用されるエネルギー帯域において、より論理的に厳密に核反応の動的過程を再現することができるかどうかの検証を行いました。まだいくつかの核種についてのみですが、従来の核反応モデル(QMD: Quantum Molecular Dynamics)と同等、若しくはより実測値に近い結果を得ることができました。

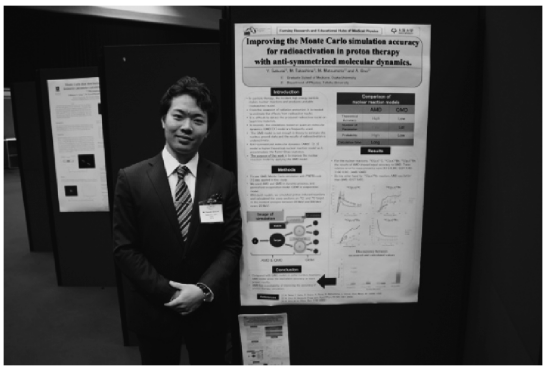
今後、福島第一原子力発電所事故を受け、平成

学会会場 (Brighton Center, UK)

学会会場正面の娯楽施設 (Brighton Pier, UK)



会場内



ポスター前にて（筆者）

Fish & Chips on Brighton Pier
（左からDr. Henry Lawrence, Ms. Reina Walter, 筆者）

宿泊先のMarina House Hotelの前でStaffと共に
（左からSuzie, 著者，Telly）

24年3月、文部科学省科学技術・学術政策局　原子力安全課放射線規制室（現在は、原子力規制庁放射線対策・保障措置課放射線規制室）より「放射性同位元素等による放射線障害防止に関する法律の一部を改正する法律並びに関係政令、省令及び告示の施行について」が関係各所に通達されており、より厳密な放射化物の取扱い・管理が求められます。一方、粒子線治療の発展は日本のみでなく、世界各国で近年急速にその兆しを見せており、その安全管理は非常に関心度の高いものだと言えます。今回の学会でも、多くの国の方々が発表内容に興味を示してくださり、安全管理に対する意識の高さがうかがわれました。

私は終始一人で行動しておりましたが、さまざまな教育セッションや昼食の歓談を通じて国々の医学物理士と意見交流を行うなか、そのモチベーションの高さに驚かされました。とりわけ、粒子線治療に対する関心は非常に高く、話が尽きることがありませんでした。粒子線治療の技術的側面のみでなく、その導入における経済的問題、健康保険制度の違い、患者の放射線治療に対する関心度の高さなど、さまざまな側面で意見を交わしました。改めて、日本の技術力の高さと社会保険の安定性を実感し、粒子線治療分野のより一層の発展が他国からも求められていることを知りました。

また、先日大阪大学で行われたJSMP第106回学術大会において、本学会に参加された諸先生方と再会し、改めて議論できたことを大変嬉しく思います。

最後に、このような機会を与えていただきました日本医学物理学会遠藤会長をはじめ、国際交流委員会福田委員長ならびに学会の先輩諸氏に、この場をお借りして厚く御礼申し上げます。

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学会報告

ICMP 2013 The International Conference on Medical Physics 参加報告 (2)

Minghui Tang

Ph. D. course 1st year
Graduate School of Health Sciences, Hokkaido University

From 1–4th September 2013 I attended the ICMP (20th International Conference on Medical Physics) held in Brighton, UK. I was fortunately chosen to have the fund support from JSMP (Japan Society of Medical Physics).

The ICMP, namely international Conference on Medical Physics, was an international scientific meeting with over 835 attendees from 58 countries. Meanwhile this meeting also celebrated the 50th anniversary of IOMP (International Organization for Medical Physics) and reviewed the development of medical physics with the theme of "New Horizons—Scientific and Global". The program focused on current and emerging science in physics and engineering applied to medicine, gathering 150 proffered papers, 212 poster presentations along with 3 plenary lectures and 174 invited speakers together with an industrial exhibition.

Topics addressed included:

- Exhibition of Cancer treatment methods and technologies
- Medical imaging and diagnostic technologies
- Novel medical devices
- Remote diagnostics and monitoring
- Radiation protection and dose reduction methods
- Rehabilitation and assistive-living technologies

My presentation, the title of which is "Arteriolar elasticity obtained from magnetic resonance signal fluctuation in human brain", was on day 4 of the conference schedule under the session named "Emerging MRI". It was a basic research. Though analyzing the spin-echo signal fluctuation in frequency domain, we picked up the component related to respiratory $PaCO_2$ changes and mapped the arteriolar elasticity. Then we used this method to compare the arteriolar elasticity on same volunteer at rest with the ones of his hyperventilation condition and verified the efficiency of the method. Evidence shows that the AD (Alzheimer's Disease) has an interaction with arteriolar vosomotion. Hence this research may provide a new method for magnetic resonance imaging to diagnose the AD and

The hall

The sunset at the Brighton beach

other arteriolar diseases such as arteriosclerosis in early stage. After the presentation, I got one question from the floor and received the advice from the chairman, which was quite helpful for me.

As an international student in Japan, I did the presentation in Japanese as normally in Japan. This presentation was my first oral presentation overseas besides Japan. The question from floor was asked in English, and I didn't catch the meaning. This experience deeply impressed me, you can read or write English, but it doesn't mean you can communicate with it freely, so it's very important to work hard on English.

In this conference, I got lots of information on medical physics which would be helpful on my research and career. As same as the situations in conferences of JSMP, MRI was not so popular among the physicists. There were just 20 people including the speakers in the MRI session. We should work harder and harder to improve the impact of it.

Brighton was a nice place, where was beautiful sunshine, beach, pier and lots of other scenes, and you can grab a beer and sit on the beach just looking at the sea for one day. The people there were very nice. My baggage didn't arrive with me in time, so the housekeeper every day comforted me and made calls to confirm when it would come. I would go there again sometimes.

Last but not least, I really want to express my gratitude to JSMP for the fund support. Thank you to give me the chance to attend the meeting. It was definitely a nice and unforgettable experience in my life.

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学会報告

ICMP 2013 The International Conference on Medical Physics 参加報告 (3)

Ritu Bhusal Chhatkuli

PhD 1st year
Department of Bioengineering, the University of Tokyo

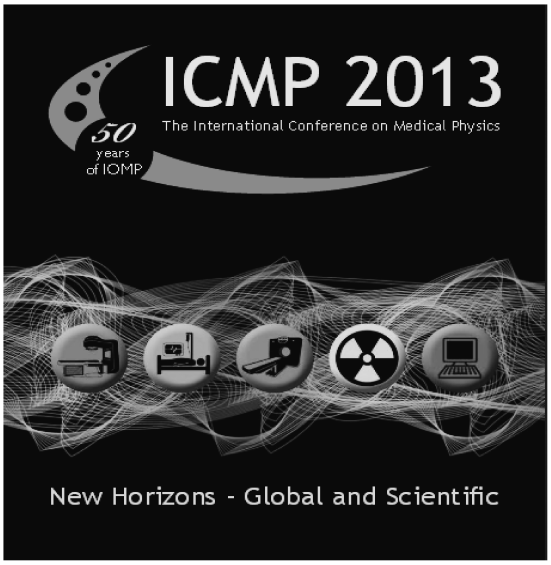
IPEM hosted the 20th International Conference on Medical Physics (ICMP2013) at the Brighton Centre, Brighton, UK from 1–4th September 2013. The event was held on behalf of the International Organization for Medical Physics (IOMP) and incorporated the 7th European Conference on Medical Physics and the 2013 Medical Physics and Engineering Conference (MPEC). Topic addressed included:

- Cancer treatment method and methodologies.
- Medical imaging and diagnostic technologies.
- Novel medical imaging devices,
- Remote diagnostic and monitoring, radiation protection and dose reduction methods
- Rehabilitation and assistive-living technologies.

The event was attended by 835 people and featured 312 international speakers, 212 posters and an exhibition.

A report on my research, a study for the implementation of dynamic tracking radiotherapy system based on time series image prediction method was selected to be presented in the imaging and adaptive radiotherapy session. My talk included time series image prediction method for lung tumor tracking during radiation therapy using PCA (Principal Component Analysis) and MSSA (Multi-channel Singular Spectral Analysis).

The session also included invited speakers talking



on imaging moving targets in radiation therapy and adaptive radiotherapy techniques.

I would like to thank JSMP for supporting me and providing me an opportunity to present in this international conference which showcased current research educational and professional development and the contribution of industry to the field of medical physics and biomedical engineering.

It has been a fruitful participation for further improvement of my research. JSMP provided me an opportunity for the academic information exchange between Japanese institutions and other international institutes and research organizations.