CONCEPTS AND METHODOLOGY OF THE PARTICLE THERAPY MASTERCLASS (PTMC) FOR CAPACITY BUILDING – PTMC IN GREECE AS A CASE STUDY

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With the aim to highlight the impact of fundamental research on the broader society, the new Particle Therapy MasterClass [1] (PTMC) package was developed and recently integrated into the International MasterClass 2021 (IMC) online programme, attracting 37 institutes from 20 countries and more than 1500 high-school students [2].

Focusing on the particular sensitive topic of cancer treatment, the main idea is to show that fundamental properties of particle interactions with matter, which are the basics for detecting them in physics experiments, are also the basis for treating cancer tumours; and that the accelerator technology, used in research laboratories, is also used at particle therapy centres.

The School of Physics at Aristotle University of Thessaloniki (AUTH), playing an important role within the PTMC core team, participated in the 6th of March PTMC2021 session [3]. The PTMC2021 in Greece was organized, in online mode, with the participation of AUTH, National Center for Scientific Research "Demokritos", Papageorgiou Hospital and Public Central Library of Veroia.

It was given a broad publicity in press and social media by the Public Central Library of Veroia, which also organized the registration and participation to the online session. It attracted a large number of participants, from whole Greece and registrations reached the maximum capacity.

The morning lectures were complemented by hands-on sessions in the afternoon.

For the hands-on sessions, the open-source professional Treatment Planning software matRad [4] was used, developed for research and training by DKFZ, the German cancer research institute, in Heidelberg [5].

The PTMC was successfully conducted thanks to the dedication and creativity of the tutors and moderators. The lectures included speakers from Greece (AUTH, Demokritos, Papageorgiou) but also from abroad, graduates from AUTH, now researchers at institutes such as CERN in Switzerland, GSI and TUM in Germany.

In the same day, another four institutes from Germany (DKFZ, GSI), N. Macedonia and Portugal performed the PTMC, and joined a common videoconference [6] to discuss their results at the end of the day.

In total, during the PTMC 2021 season, 6 PTMC common videoconferences took place, each one with about 6 institutes performing the PTMC locally in each of its 6 sessions.

The aim of the PTMC is to motivate high-school students for STEM studies, to highlight the importance of fundamental research and its direct impact on society, developing on the theme of using the acquired knowledge on particles and their interaction with matter in medical applications. Through the overall process, students are shown "what physics has to do with medicine" and what are the various possibilities that physics, and STEM studies may open up for job opportunities in fields that there is lack of expert personnel.

These events support capacity building in preparation for the future ion research and therapy facility planned by the South-East European Institute for Sustainable Technologies, SEEIIST, where Greece also actively participates as a full member with contributions from AUTH.

For the PTMC 2022 AUTH is taking leading role for organizing a special PTMC to celebrate the "International women's day in STEM" on the 11th of February with support from the PTMC core team. This presentation will describe experiences from both, the PTMC2021 and PTMC2022 and the response of participants, also outlining further possible improvements and developments.

REFERENCES

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