

MSc project in Medical Physics

Analysis of patient specific verification measurements

@ Medical University of Vienna / AKH Wien

Supervisors: Dr. Petra Trnková, Dr. Wolfgang Lechner, Dr. Gerd Heilemann, Prof. Dr. Dietmar Georg

The Department of Radiation Oncology at the Medical University of Vienna offers a master project in medical physics starting from February 2023.

Job description:

Patient specific plan quality assurance (PSQA) is an essential workflow step for validation of safe and high-quality treatment plan delivery. Currently, all Volumetric Modulated Arc Therapy (VMAT) treatment plans created at the Department of Radiation Oncology, Medical University of Vienna (MUV) have to undergo dose measurements and an independent dose calculation. As the dose measurements are resources demanding, PSQA based only on an independent dose calculation should be implemented in the future.

To identify for which treatment plans independent dose calculation can replace the dosimetric measurements providing sufficient accuracy for the validation of plan quality, it is necessary to systematically evaluate the results of PSQA performed. Therefore, the aim of the proposed thesis is to analyse the data of PSQA performed in the last half a year and search for correlations between beam specific parameters and measurements outcomes. The expected outcome of the thesis is a recommendation for which treatment plans only independent dose calculation can be performed and which treatment plans will still require measurements.

This project is highly collaborative with a direct interaction with clinical medical physicist. The results will lead to change of clinical guidelines of PSQA at MUV.

Qualifications:

- Student of physics or biomedical engineering
- Basic Python knowledge
- Research interest in medical physics
- Analytical skills and ability to work independently on a project basis
- Good communication skills relevant for working in an international and interdisciplinary research group

Conditions:

The working place will be the Department of Radiation Oncology at the Medical University of Vienna.

Please submit applications by email to Prof. Dr. Dietmar Georg (Dietmar.georg@meduniwien.ac.at) or Dr. Petra Trnkova (petra.trnkova@meduniwien.ac.at).