Artemis Kontogoula, M.Sc.

artemis.kontogoula@gmail.com | Kariatidon 88, 17455, Athens, Greece

Research Experience

MASTER STUDENT, UNIVERSITY OF HAMBURG, GERMANY, 2019-2021
- Determination of the Hounsfield Unit - Electron Density (HU-ED) calibration curve, with CIRS tissue characterisation phantom and the calibration uncertainty for the dose calculation
- Registration of Cone-Beam CT (CBCT) images to CT images, using deformable image registration method
- Calculation of accumulated dose for prostate cancer
- Study of the influence of daily organ deformations on the performance of the algorithm, through Dice similarity coefficient and Hausdorff distance
- Calculation of the actual dose delivered to the hand-delineated healthy tissues in the vicinity of the prostate, especially during days with significant organ volume deviation and comparison to the planning one

INTERN,UNIVERSITY MEDICAL CENTER HAMBURG-EPPENDORF(UKE), HAMBURG, 2021
- Normal Tissue Complication Probability (NTCP) evaluation using a dataset of 200 prostate cancer patient records
- NTCP estimation based on the Lyman-Kutcher-Burman (LKB) model for the two organs at risk - bladder and rectum
- Comparison between the NTCP data as provided in the literature and the values as predicted by the LKB model
- Personalised calculation and prediction of the NTCP for every patient, given the irradiation plan
- Reviewing the results with medical physicists and radiation oncologists

INTERN, DESY, HAMBURG, 2019-2020
- Feasibility study for an electron bunch compressor at a unique beam-driven plasma-wakefield experiment, FLASHForward
- Assessment of the beam quality with the addition of a bunch compressor, through simulations
- Study of possible location in the beamline and consideration of various design options of the bunch compressor (type of the magnets, the distance and angle between them)
- Collaboration with physicists and engineers in an international environment

BACHELOR STUDENT, UNIVERSITY OF ATHENS, GREECE, 2014-2019
- Investigation of various possibilities for the suppression of coherent synchrotron radiation (CSR) effects at FLASHForward, in order to achieve high beam quality - a prerequisite for plasma acceleration experiments
- Study of whether CSR effects can be reduced sufficiently by tuning the electron beam optics
- Optimal optics arrangement for achieving high beam current while maintaining its low emittance

SUMMER STUDENT, DESY, HAMBURG, 2017
- Study of the electron spectrometer for FLASHForward, located at the end of the beamline
- Analysis of the magnetic field profiles, study of the particle trajectory inside the spectrometer and determination of its energy resolution

Education

MSc in Physics, University of Hamburg, Germany, 2019-2021
Thesis: Deformable image registration studies for the calculation of accumulated dose for prostate cancer.

BSc in Physics, University of Athens, Greece, 2014-2019
Thesis: Investigation of compression scenarios for the suppression of coherent synchrotron radiation (CSR) effects at FLASHForward accelerator.

Skills and Qualifications

MEDICAL PHYSICS
- CT and CBCT image acquisition at the Clinic for Radiation Therapy and Radiation Oncology of the University Medical Center Hamburg-Eppendorf (UKE)
- Usage of image processing software for handling imaging data sets
- Experience with treatment planning systems for dose calculation for Adaptive Radiotherapy (ART)
- Fractionation scheme in radiotherapy

PROGRAMMING LANGUAGES AND SOFTWARE
Python | C++ | SimpleITK | Plastimatch | ImageJ | Eclipse™ (Varian Medical Systems)

LANGUAGES
English (fluent) | German (advanced) | French (advanced) | Greek (native)

Summer Schools and Conferences

SUMMER STUDENT, GERMAN CANCER RESEARCH CENTER (DKFZ), 2021
Summer School in Medical Physics: Applied computational methods for radiotherapy (RT).

JOINT CONFERENCE OF THE ÖGMP, DGMP and SGSMP 2021
Poster: Deformable image registration studies for the calculation of accumulated dose for prostate cancer.