

## **Team Name**

*Health Physics innovations in diagnostic and therapeutic fields*

## **Work Programme**

Health Physics plays an important role for the application of the optimization principle in radiotherapeutic and in radiologic practice. This principle establishes that all radiation exposures must be as low as possible accordingly the diagnostic information to be reached. Moreover the doses delivered to healthy tissues must be as low as possible accordingly the therapeutic results to be reached by tumor irradiation .

Legislative decree 101/2020 enforced the application of the optimization principle by a closer control of radiation expositions. At this aim we want to show the effectiveness of new solutions in radioterapeutic treatments and in radiologic exams, able to increase their safety and performances.

Team interests will be focused on:

- the plan parameters optimization in order to increase the performances of the radiotherapeutic VMAT plans;
- the clinical validation of a new methodology for treatment plan verification ;
- the study of a new methodology for patients needing close periodic radiologic exams.:

## **Team composition**

Team Leader

*Dott. Pasquale Tamborra*

Team members:

Dott. Vittorio Didonna

Dott.ssa Raffaella Massafra

Dott. Domenico Sabatino

Dott.ssa Annarita Fanizzi

Dott.ssa Maria Comes

Dott. ssa Samantha Bove

Dott. Cristian Cristofaro

Sig. Roberto Maria Bernardi

**Team networks:**

Dott. Savino Cilla, Ospedale Gemelli Molise, Università Cattolica del Sacro Cuore, Campobasso (CB)

**Key funding:**

Ricerca Corrente 2022

**Key publication:**

- P. Tamborra, E. Martinucci, R. Massafra, ..., V. Didonna “The 3D isodose structure-based method for clinical dose distributions comparison in pretreatment patient-QA” *Med Phys.* 2019;46(2):426–436 doi: 10.1002/mp.13297;
- C. Ferrari, A. Di Palo, A. Niccoli Asabella, V. Didonna, ..., G. Rubini “<sup>18</sup>F-FCH and <sup>90</sup>Y PET/CT data for the early evaluation of HCC radioembolisation” *Clinical and Translational Imaging*, Volume 6, Issue 5, 1 October 2018, 357-367 doi: 10.1007/s40336-018-0295-6;
- P. Scalchi, A. Ciccotelli, G. Felici, A. Petrucci, R. Massafra, ..., A. Soriani “Use of parallel-plate ionization chambers in reference dosimetry of NOVAC and LIAC<sup>®</sup> mobile electron linear accelerators for intraoperative radiotherapy: A multi-center survey” *Med. Phys.* 2017, 44 (1), 321-332 doi: 10.1002/mp.12020.
- S. Cilla, L. Caravatta, V. Picardi, D. Sabatino, G. Macchia, C. Digesù, F. Deodato, M. Massaccesi, M. De Spirito, A. Piermattei, A.G. Morganti “Volumetric Modulated Arc Therapy with Simultaneous Integrated Boost for locally advanced rectal cancer” *Clinical Oncology*. 2012, 24 261-268 doi: 10.1016/j.clon.2011.07.001
- K. Otto “Volumetric modulated arc therapy: IMRT in a single gantry arc” *Med Phys.* 2008;35(1):310-7. doi: 10.1118/1.2818738