Special Issue

Engineering the Future of Radiotherapy: Innovations and Challenges

Message from the Guest Editors

Cutting-edge advancements are transforming radiation therapy (RT), minimizing toxicity and maximizing efficacy. New techniques like stereotactic radiosurgery, proton therapy, and image-guided RT (IGRT) are improving outcomes. The combination of nanoparticles (NPs) and RT opens up a new frontier in cancer treatment. NPs can be used as contrast enhancement in IGRT and may lead to an increased local radiation dose by using particles with higher atomic numbers (Z). The introduction of AI in the routine clinical practice of radiation oncology automates processes, personalizes treatment, and improves quality control. Deep learning models are used for automatic delineation and the segmentation of tumors and organs at risk. AI has also been utilized in treatment planning and optimization. All innovations are driving the RT in the "era of excellence" in anticancer treatment, undertaking the challenge of developing more sophisticated and tailored RT.

Guest Editors

Dr. Kalliopi Platoni

Department of Applied Medical Physics, "ATTIKON" General University Hospital, Medical School, National and Kapodistrian University of Athens, Athens, Greece

Dr. Vassilis Kouloulias

2nd Department of Radiology, Radiation Oncology Unit (Attikon Hospital), School of Medicine, National and Kapodistrian University of Athens, Athens, Greece

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Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
bioengineering@mdpi.com

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Editor-in-Chief

Prof. Dr. Anthony Guiseppi-Elie
Department of Biomedical Engineering, Texas A&M University, College Station, TX 77843, USA

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