

## **Special issue on Particle Therapy**

**Call for papers: deadline extension to 1<sup>st</sup> of March**

Guest Editors

Maria Giuseppina Bisogni, Giulio Magrin, Peter Thirolf

The IEEE TRPMS encompasses radiation- and plasma-related technologies for medical applications, including radiation detectors, imaging instrumentation, radiation-based image reconstruction, data analysis and image processing, and clinical/preclinical evaluation of imaging systems. We are organizing a special issue on particle therapy research and applications in collaboration with the Editorial Board of the IEEE TRPMS, to be published in 2019.

Particle therapy has become the therapeutic elective choice for a growing number of patients with several cancer pathologies since it increases the probability of controlling the tumor and spares healthy tissues from radiation adverse effects better than conventional radiotherapy. In recent years there has been a steady increase in the number of treatment centers in the world and the number of patients treated with both, protons and carbon ions has grown exponentially to a total of 200 000 patients with an increase of more than 20 000 per year. New experiments and the request for optimization of particle therapy have motivated the development of a flourishing research activity on numerous topics.

We would like to invite authors to submit papers related to research and applications in particle therapy. The topics include but are not limited to:

- Overview
  - Clinical perspective (i.e. physicians views, clinical trials)
  - Facilities in operation and planned
- Detectors
  - Beam delivery
  - Dosimetry
  - Tools for quality assurance
  - Radiation Quality
- Modelling
  - Biological effects
  - Treatment planning
  - Fragmentation cross section
- Present and future challenges
  - Image guidance (in-room imaging, range monitoring and verification, detector developments)
  - Beam scanning, moving targets, motion mitigation strategies
  - Improvements in accelerator and new accelerator design (i.e. compact accelerators, laser-driven acceleration schemes, radioactive beams)
  - Ion species other than protons and carbon ions

Authors must submit papers digitally according to <https://mc.manuscriptcentral.com/trpms>, indicating that the submission is aimed for this special issue in the cover letter. Authors are encouraged to contact the guest editors to determine suitability of their submission for this special issue.

**Guest Editors:**

**Maria Giuseppina Bisogni, PhD**

University of Pisa, Department  
of Physics and INFN Pisa  
Largo B. Pontecorvo, 3  
I-56127 Pisa  
Phone: +39 0502214240  
Giuseppina.bisogni@pi.infn.it

**Giulio Magrin**

EBG MedAustron  
Marie Curie-St. 5,  
2700 Wiener Neustadt, Austria  
Phone: +43 2622 26 100 611  
giulio.magrin@medaustro.at

**Peter Thirof, PhD**

Department f. Physik  
der LMU  
AmCoulombwall 1  
D-85748Garching  
Phone: +49 89 2891 4064  
Peter.Thirof@physik.uni-muenchen.de

**Schedule:**

Submission of manuscripts: March. 1, 2019  
Acceptance/rejection notification: Mai 1, 2019  
Revised manuscripts due: July 1, 2019  
Publication: November 1 2019