23-06-11 2nd Workshop Radiotherapy & Mathematics

June 23rd, 2011
Salón de Grados, Faculty of Mathematics
University of Santiago de Compostela

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Workshop Poster

Scope In the last few years, large efforts have been invested in the development of mathematical models which describe radiotherapy treatment. This study can be tackled from several points of view:
- Dose calculation in cancer treatments: Based on Monte Carlo methods or on the solution of the three-dimensional transport equation.
- Treatment optimization: The objective function will have some restrictions provided by the oncologist in each particular case.
- Tumor behavior modeling when treated with radiotherapy: By using image treatment algorithms (image guidance in radiotherapy IGRT) or by using new optimization methods based on biological data (biologically guided radiotherapy BGRT).

The objective of this 2nd Workshop Radiotherapy and Mathematics is to continue the collaborations started in the first edition and to have an idea-sharing session with relevant research groups in mathematics and members of the hospital community on radiotherapy treatment modeling. The Workshop will consist of presentations of different models used to simulate the tumor behavior in this type of treatments, numerical techniques used to resolve these models, the most important challenges in this field and possible transference of these results.Scientific and Organizing Committee

- Andrés Gómez Tato (Centro de Supercomputación de Galicia)
- Óscar López Pouso (Universidade de Santiago de Compostela)

- Mª Teresa Sánchez Rúa (Centro de Supercomputación de Galicia)Speakers

- Iuliana Dasu, Stockholm University and Karolinska Institutet, Sweden.
- Bruno Dubroca, Centre Lasers Intenses et Applications, Bordeaux, France.

- Martin Frank, RWTH Aachen University, Germany.
- Diego Miguel González Castaño, Radiation Physics Laboratory, Universidade de Santiago de Compostela.
- Michel Herranz Carnero. Fundación IDICHUS, Hospital Clínico Universitario de Santiago.

- Miguel Ángel Herrero García, Universidad Complutense de Madrid.

- Antonio López Medina, Hospital do Meixoeiro, Vigo.

Programme

09:00 Workshop Opening

09:15 Biological effects of Radiation. What it does? And how to follow up?
Michel Herranz Carnero, Director Programa Imagen Molecular, IDICHUS

10:15 Modelling of tumour hypoxia - the first step towards the Virtual Tumour
Iuliana Dasu, Karolinska Institutet

11:00 Reduced angular moment model for the transport of electron particles in classical and relativistic regime
Bruno Dubroca, Centre Lasers Intenses et Applications

11:45 Coffee Break

12:15 The potential of deterministic transport methods for treatment planning
Martin Frank, RWTH Aachen University

13:00 Some optimization problems in radiotherapy
Miguel Ángel Herrero García, UCM

13:45 Lunch Break

16:00 An alternative method to Full Monte Carlo simulation in the dosimetry of clinical radiotherapy fields
Diego Miguel González Castaño, USC
16:45 Treatment response assessment in radiotherapy based on proton diffusion measured by magnetic resonance imaging
Antonio López Medina, Hospital do Meixoeiro

17:30 Workshop Closing

Registration

Attendance is free of charge, but registration is mandatory.

Registration form. Registration closed.

RSME Grant

The Real Sociedad Matemática Española (RSME) is offering a 200€ grant to students collaborating in the organization or attending the Workshop,

and that have any associated expenses such as travel, accommodation or maintenance.

Those who are interested must send a brief CV (with qualification marks), as well as a brief motivation letter, to the email address oscar.lopez@usc.es not beyond May 31st 2011.

Travel and accomodation

Reservations may be directly made by the interested persons by contacting the travel agency:

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Contact

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