

# Teddy Pichard – Curriculum Vitae

## PhD student

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### Fields of interests

- Kinetic and Moments models for the transport of particles
- Numerical methods for hyperbolic systems
- The "Generalized Moment Problem" (i.e. existence of a representing measure for a set of moments)
- PDE constrained optimization
- Mathematics for radiotherapy dose computation and treatment planning optimization

### Education

<b>2013-present</b>	PhD student in cotutelle in the <i>RWTH Aachen University</i> and the <i>Université de Bordeaux</i> Thesis : "Mathematical modeling for dose deposition in photontherapy and protontherapy" Advisors : Stéphane Brull, Bruno Dubroca and Martin Frank
<b>2010-2013</b>	Engineering diploma at the <i>ENSEIRB-MATMECA</i> in parallel with a Research master in applied mathematics in the <i>Université de Bordeaux</i> Thesis : "Moments models for radiotherapy dose simulation" Advisors : Stéphane Brull and Bruno Dubroca
<b>2008-2010</b>	CPGE class, 2 year intensive class preparing to engineering schools entrance exams Major : Mathematics and Physics Thesis : Periodic tessellations of the hyperbolic plan

### Publications

- T. Pichard, D. Aregba-Driollet, S. Brull, B. Dubroca and M. Frank: **Relaxation schemes for the  $M_1$  model with space- dependent flux: application to radiotherapy dose calculation**, *accepted for publication in Comm. in Comp. Phys.*
- J. Caron, J.-L. Feugeas, B. Dubroca, G. Kantor, C. Dejean, T. Pichard, Ph. Nicolaï, E. D'Humières, M. Frank, V. Tikhonchuk: **Deterministic model for the transport of energetic particles: Application in the electron radiotherapy**, *accepted for publication in Phys. Med.*

- T. Pichard, G.W. Alldredge, S. Brull, B. Dubroca and M. Frank: **An approximation of the  $M_2$  closure: Application in radiotherapy dose simulation**, *work in progress*
- T. Pichard, G.W. Alldredge, S. Brull, B. Dubroca and M. Frank: **The  $M_2$  model for dose simulation in radiation therapy**, *submitted to proc. 24th Int. Conf. on Transport Theory*

## Presentations

- Aachen, Germany, **Numerical model for radiotherapy dose simulations**, *Mathcces lunch seminar*, november 2013
- Aachen, Germany, **Continuous and discrete expansion for spectral methods : spectral convergence**, *Participation to the serie of seminars on spectral methods*, may 2014
- Bordeaux, France, **Numerical model for radiotherapy dose simulations**, *CELIA PhD seminar*, february 2015
- Aachen, Germany, **On the angular moments model, an approximation for the  $M_2$  closure**, *Mathcces lunch seminar*, april 2015
- Nashville, TN, USA, **Proceeded : Relaxation model for the  $M_1$  model in radiotherapy**, *M&C+SNA+MC conference*, april 2015
- Aachen, Germany, **Boundary condition for  $P_N$  models in neutron transport**, *Participation to the serie of seminar on boundary conditions for moment models*, mai 2015
- Aachen, Germany, **Relaxation model for the  $M_1$  model in radiotherapy**, *YIC conference*, july 2015
- Taormina, Italy, **The  $M_2$  model for dose computation in radiotherapy**, *ICTT conference*, september 2015
- Bordeaux, France, **The  $M_2$  model for photon transport in radiotherapy**, *CELIA PhD seminar*, november 2015
- Marseille, France, **The  $M_2$  model for photon transport in radiotherapy**, *CIRM workshop on oncology*, december 2015

## Posters

- Lille, France, *ABPDE conference*, october 2013
- Bordeaux, France, *Doctoral school day and Modelisation and Numerical Methods for Hot Plasmas conference* november 2014
- Carry-le-Rouet, France, *CANUM*, april 2014
- Porto-Ercole, Italy, *summer school M&MKT*, june 2014
- Toronto, *Moments models in Kinetic theory conference*, october 2014
- Le Havre, *EDP-normandie : Ve Colloque EDP-NORMANDIE*, october 2015

## Teaching experiences

- Organisation of the Mathe2 Summer Semester 2013-2014 (in german) exercice courses