Pierre-Yves Ph. GUERDER, Mr
(address is hidden)
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French nationality
Born on May 1987
Clean driving license
1 star diver up to 40m
Married, two children
https://py.guerder.fr

PROJECTIVE

French student with a PhD in physics from "*École Centrale de Lille*" and the University of Arizona currently employed in a web development company on innovative projects.

EDUCATION

2014- Web developer at ***Spyrit*** *systèmes d'information*. Frameworks **Symfony2/3/4** and **ReactNative**
Update Sf2 projects to 3/4. **Docker**. **PHP7**. **Propel2**. Doctrine. **VueJS**. **jQuery**.

2011-2014 PhD at ***École Centrale de Lille***, **IEMN** and **The University of Arizona** at Tucson

2007-2011 ***École Centrale de Lille***: Graduate School in Engineering; graduation in 2011 (**Master's degree**)
Specialization in "Waves, micro-nano-technologies, telecom" and MSc in scientific research

2005-2007 **Classe préparatoire aux Grandes Écoles – CPGE – Lycée Fénelon** (Paris)
Intensive undergraduate studies in maths and physics for admission to École Centrale de Lille

June 2005 **Baccalauréat "S"**: Scientific High School diploma, with highest honours (equivalent to A' level)

PROFESSIONAL EXPERIENCE

2010-2014 Project (6 months), internship (3 months) and research (2 years) at **IEMN** and the U of A (1 year): development and simulations for elastodynamics on CPU/GPU clusters (Fortran, Python, CUDA)

2012-2014 Teachings in electronics (128 h of lab. for 2nd to 4th year students) at *École Centrale de Lille*

Sum. 2011 Google Summer of Code: **MediaWiki parser** in **Python** implemented for the **Mozilla Foundation**

Sum. 2010 **Google Summer of Code**: improving **MediaWiki** software (object-oriented PHP, MySQL, eclipse)

2009-2010 **Gap year in China** (at the ***Shanghai*** *Institute of Ceramics – Chinese Academy of Sciences*)
- Scientific research in nanotechnologies and deposition of active materials in thin layers

Sum. 2009 IT internship at **EADS-DS**: development in **Java** of a multi-agent system
- Simulation of a military logistic chain for crisis management (confidential project)

2007-2009 **Project management** (2-year project, 300 h, 6-student team), in collaboration with LAGIS
- Design and development of a mobility-helper system using GPS, WiFi, PHP and C#

Sum. 2008 **Research internship** in the *Electrical Engineering Department* of the **University of Texas**
- Two-month study at UT Austin about solar panels and Sun power measurements

2005, 2008 Two 1-month internships: database management and cost assessment for a relocation

LANGUAGES AND IT SKILLS

English: work language, several stays in the UK and the USA; TOEIC: 955/990; TOEFL: 613/677 in 2008
French: mother tongue **Spanish**: medium level **Chinese**: strong bases in speaking

Self learnt skills

- Programming (**PHP**, **MySQL/SQLite**, **jQuery**, **Wordpress**, **C/C++**, **Java**, Caml, **Python**, CUDA) in **Eclipse**
- Good command of image/video/modeling software (PhotoShop, **Gimp, digiKam**, Kino, Catia)
- Configuration of production **VPS** with **Linux**, **Apache2**, **PHP-FPM**, **MySQL**, **OpenSSH**.

Involvement in IT projects

- **Trouble-shooting** (hardware, software) and **advising** to individuals, website creation (e-business)
- Involvement in the development and translation of **free software projects** (**KDE**, Gramps, **MediaWiki**...)
- Contributor on the free encyclopaedia **Wikipedia** since May 2005 (30 k edits), helping in organizing events

HOBBIES AND COMMUNITY INVOLVEMENT

2007-2012 Active member of an association which teaches adults how to read and write

2004-2010 Tutored middle and high school students in mathematics

Hobbies Computing, photography, electronics, genealogy, theology, bioethics and scuba diving
Writing reports about my trips (Europe, Asia, USA) and articles for Wikipedia

References available upon request

RESEARCH

PhD

"Theoretical and numerical study of tunable magnetoelastic and nonlinear phononic crystals"

My PhD is dedicated to the theoretical and numerical study of magnetoelastic phononic crystal materials, intended for integrated technology of new generation of Radio Frequency devices with extended tuning functionalities. To obtain sufficient tuning (at least 20 %) of the properties of those structures, we consider the introduction in the periodic arrangement of magnetoelastic (or magnetostrictive) active materials with Spin Reorientation Transition (SRT). We hope we will open totally specific properties non-available in already known materials: acoustic isolation application (furtivity), potential switching capability, tunable impedance matching layer for phased array ultrasonic transducers, modification of the effective properties of the phononic crystal leading to isotropic or anisotropic material with controlled properties.

For this goal, I develop an innovative numerical tool based on the Discontinuous Galerkin Finite Element Method (DG-FEM) for the simulation of both linear and nonlinear wave propagation in finite and semi-infinite media. The implementation of this DG-FEM code for 3D simulations benefits from the efficient exploitation of modern computer infrastructure (multi-core processors, GPU units, clusters) using the property of massive parallelization of DG algorithms.

My thesis is part of a joint agreement for an international PhD degree between École Centrale de Lille and the *Materials Science and Engineering department* of the *University of Arizona* at Tucson where I worked from January to December 2013.

Thesis directors:

- Olivier Bou Matar, LIA LEMAC, IEMN, UMR CNRS 8520, PRES Lille Nord de France, ECLille, Villeneuve d'Ascq
- Jérôme Vasseur, IEMN, UMR CNRS 8520, IUFM Nord-Pas de Calais, Université d'Artois, Villeneuve d'Ascq
- Pierre Deymier, *Materials Science and Engineering department*, *University of Arizona*, Tucson, USA

Publications

- O. Bou Matar, **P.-Y. Guerder**, Y. Li, B. Vandewoestyne, K. Van Den Abeele, *A nodal discontinuous Galerkin finite element method for nonlinear elastic wave propagation*, J. Acoust. Soc. Am. 131 (5), 3650-3663 (2012)
- **P.-Y. Guerder**, A. C. Deymier-Black, N. Z. Swinteck, J. O. Vasseur, O. Bou-Matar, K Muralidharan, P. A. Deymier, *Multi-phonon scattering processes in one-dimensional anharmonic biological superlattices: understanding the dissipation of mechanical waves in mineralized tissues*, Journal of the Mechanical Behavior of Biomedical. 37, 24-32 (2014)
- **P.-Y. Guerder**, S. Giordano, O. Bou-Matar, J. O. Vasseur, *Tuning the elastic nonlinearities in composite nanomaterials*, J. Phys.: Condens. Matter 27 (2015) 145304

Congresses

- O. Bou Matar, **P.-Y. Guerder**, Y. Li, *Une méthode Galerkin discontinue nodale pour la propagation non linéaire d'ondes élastiques fonctionnant sur carte graphique (GPU)*, XIIèmes Journées d'Acoustique Physique Sous-Marine et Ultrasonore, JAPSUS 2011, Lille, 8-10 juin 2011.
- O. Bou Matar, **P.-Y. Guerder**, *Nonlinear elastodynamic simulations using a Discontinuous Galerkin method on graphics processors*, Acoustics 2012, Nantes, 23-27 avril 2012.
- O. Bou Matar, **P.-Y. Guerder**, H. Zhou, V. Aleshin, Nonlinear elastodynamic simulations using the discontinuous Galerkin finite element method on graphics processors, 18th International Conference on Nonlinear Elasticity in Materials, ICNEM XVIII, Ascona (Suisse), 2013

Teachings

- Lab. work (128 h in Fall 2012 and Spring 2014) :
  - Waves, for 2nd year students, at ITEEM
  - Solid Physics, for 3rd year students, at *École Centrale de Lille*
  - Electronic Systems, for 4th year students, at *École Centrale de Lille*
- Project management (Spring 2012) :
  - Development of a module for digiKam (KDE software), cooperation with INRIA and Master 1 students