Marc Henry de Frahan

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Education

2011-present **Ph.D. in Mechanical Engineering**, *University of Michigan*, Ann Arbor, MI
Research focus: Hydrodynamic instabilities in high energy density physics
Advisor: Prof. E. Johnsen

2009-2011 **M.S. in Applied Mathematics Engineering**, *Université Catholique de Louvain*, Belgium, completed with *Grande Distinction*
Specialization: Numerical simulation and modeling
Thesis: Implementation of a Discontinuous Galerkin Method for hyperbolic PDEs on GPUs
Thesis supervisors: Dr. J-F Remacle, Dr. P. Chatelain, Dr. V. Legat.

Fall 2010 **Study Abroad Semester**, *Inst. Nat. des Sciences Appliquées de Toulouse*, France

2007-2009 **B.S. in Applied Mathematics Engineering**, *Université Catholique de Louvain*, Belgium, graduated with *Distinction*. *Minor:* Physics

2006-2007 **Freshman year Physics major**, *Georgetown University*, Washington D.C, USA

Research interests

Discontinuous Galerkin method for multifluid flows

Hydrodynamic instabilities in high energy density physics

Computational high energy density plasmas, MHD *and multifluid*

Material strength models under extreme dynamic loading conditions

Shock-turbulence interaction, multifluid turbulence

High performance computing, *graphics processing units*

Relevant experience

Summer 2012 **Student Intern**, *Lawrence Livermore National Lab.*, Livermore, CA
Comparing Beryllium strength models with experimental data
Supervisors: Dr. B. Remington and Dr. R. Cavallo

May-June 2012 **Long-term Participant**, *Computational Methods in High Energy Density Plasmas*
Workshop hosted by the Institute for Pure and Applied Mathematics at UCLA

Summer 2010 **Student Intern**, *Lawrence Livermore National Lab.*, Livermore, CA
Studied hydrodynamic instabilities in inertial confinement fusion targets
Characterized growth factors during capsule compression
Supervisors: Dr. L. J. Suter and Dr. D. S. Clark

Summer 2009 **Student Intern**, *Lawrence Livermore National Lab.*, Livermore, CA
Studied hot electron signatures and capsule preheat in the context of inertial confinement fusion as developed at the National Ignition Facility
Supervisors: Dr. L. J. Suter and Dr. C. A. Thomas

Summer 2008 **Student Intern**, *Lawrence Livermore National Lab.*, Livermore, CA
Studied and optimized National Ignition Facility inertial confinement fusion target geometries using view factor calculations
Supervisors: Dr. L. J. Suter and Dr. C. A. Thomas

Publications

Marc T. Henry de Frahan and Eric Johnsen. Interface capturing for multifluid simulations with shocks using Discontinuous Galerkin approaches. 2012. submitted.

Presentations

M. T. Henry de Frahan, J. L. Belof, R. M. Cavallo, O. Ignatova, E. Johnsen, B. A. Remington, V. Raevsky, Beryllium strength under extreme dynamic loading conditions, APS 54^{th} Meeting of the Division of Plasma Physics, Oct. 2012, Providence, RI

M. T. Henry de Frahan, D. S. Clark, L. J. Suter, Hydrodynamic instabilities in inertial confinement fusion targets, WCI Summer Presentation, Sept. 2010, Livermore, CA

M. T. Henry de Frahan, C. A. Thomas, L. J. Suter, Hot electron signatures and preheat, WCI Summer Presentation, Sept. 2009, Livermore, CA

M. T. Henry de Frahan, C. A. Thomas, L. J. Suter, Achieving symmetry without the inner cone, WCI Summer Presentation, Sept. 2008, Livermore, CA

Memberships

2012-present **American Physical Society**, student member

2011-present **Center for Radiative Shock Hydrodynamics**, *University of Michigan*, student member

Awards

Poster Winner, LLNL 2012 Summer Poster Session, Livermore, CA

Computer skills

Scientific programing: C/C++, C for CUDA, Hydra, Ares, Yorick, ITS Monte-Carlo Codes, OpenMP, MPI, Matlab, Python, Gambit/Fluent, Patran/Nastran

Operating systems: GNU/Linux, Windows

Languages

English	**fluent**	*First mother tongue*
French	**fluent**	*Second mother tongue*
Dutch	**proficient**	*6 years in secondary school*