Resume **Martín Huarte-Espinosa** **martinhe@pas.rochester.edu**
27.02.2014 University of Rochester NY 1-760-390-0180

Education

Ph.D., Computational Physics, 3/2011 (thesis submitted 11/2010), Cavendish Laboratory & Kavli Institute for Cosmology, **University of Cambridge, UK.**

College (2003) and equivalent of **MSc.** (2004) with distinction in Theoretical Physics, Institute of Astronomy, **UNAM University, Mexico City.**

IT expertise

Operating systems	Unix & Linux (9 yrs), Mac OS (3 yrs) & Windows (10+ yrs).
Languages	Expert: FORTRAN (due to job opportunities), LATEX. Advanced: C$^{\#}$, C++, Linux scripting, Python, HTML, XLM, & others.
Multi-threading	Message Passing Interface (MPI).
Data analysis	Tb datasets of multi-dimensional arrays.
Used supercomp.	Stampede (6th world's fastest 2013), Kraken, Darwin, BlueGene/Q, BlueHive.
Queue protocols	PBS, CMD, Condor & Slurm.
Software	Visual Studio 2012, Silverfrost FTN95, Excel, Word, Power point, Gnuplot, MathLab, Mathematica, Understand, Valgrind, Vampir, & others.
Fluid dyna. codes	Flash[1] (**parallel, adaptive-mesh-refinemet (AMR)**, contributed with about 6% of 500k lines). AstroBear[2] (**parallel, AMR**, contributing with about 10% of 50k lines).
Web Support	Optical Diagnostics & Applications Laboratory page[3]; Personal page[4].

Employment History

3/2013-present	**1 year, Scientific Software Developer & Research Associate:** Institute of Optics; HAJIM School of Eng. & Applied Sciences, **University of Rochester NY.** - Analyze, develop, test, document, open-access and communicate research platforms on simulations of optical instrumentation with **direct commercial applications**, - Mentor research at the Hopkins Center for Optical Design & Eng., - Write parts of research grant proposals and reports, - Web support[3].
10/2009-present	**4 years 5 months, Research Associate & Software Developer:** Computational Astrophysics Group, **University of Rochester, NY.** - **AMR, parallel, multi-Physics code** AstroBear[2] development, testing, documenting & advertising, - Writing research grants proposals and numerical allocation applications, - Identifying topical problems in high energy density magnetized **plasmas and fluid dynamics**, - Designing, implementing, testing & carrying forward state of the art, parallel simulations to study these problems, - Analyzing statistically, mathematically and visually data and simulation results, - Publishing research in high impact international peer reviewed Journals, and presenting work at international conferences, - Mentoring/training undergraduate & graduate students, and researchers.
2002-2014	**Mentor:** 10+ graduate & 20+ diverse undergraduate students.
2012-2013	**Classroom teaching** along with Prof. Adam Frank: Astro 105, "The Milky Way", undergraduate students, University of Rochester, NY.

[1] flash.uchicago.edu/site. [2] clover.pas.rochester.edu/trac/astrobear/wiki. [3] www.odalab−spectrum.org.
[4] www.pas.rochester.edu/∼martinhe.

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2007-2008 **Demonstrator:** Computational Physics (Linux, Fortran, Excel), & Mathematical Methods, University of Cambridge, Department of Physics, Cambridge UK.

2005 **Academic Technician:** Aerogel Laser Characterization, AMS-RICH detector, International Space Station. Laboratory for Subatomic Physics and Cosmology, Grenoble **France** & Institute of Physics, UNAM, Mexico City.

2002-2004 **Teacher Assistant:** Undergraduate: Electromagnetism; Special Functions & Integral Transforms; Vector Mechanics. Graduate: Relativistic Astrophysics. UNAM University, Mexico City.

1996 **Internship: Developer** at VenturesSoft of Mexico, Mexico City, HR software, Power Builder & Basic.

Courses 2^{nd} Course, International School on Astrophysical Relativity, "John Archibald Wheeler", Erice Italy, 2008.

Message Passing Interface (MPI) parallel programming language, Edinburgh Parallel Computing Centre (EPCC), Scotland, UK, 2008.

Adaptive-mesh refinement parallel simulations with FLASH, Workshop, Jacobs University, Bremen, Germany, 2007.

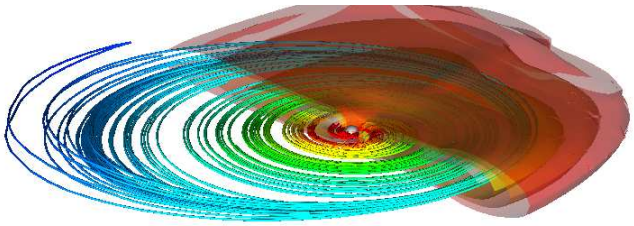
Selected peer reviewed publications, 1st. author (also presented at international conferences)

• *The Formation and Evolution of Wind-Capture Disks In Binary Systems*, Huarte-Espinosa et al., 2013, Monthly Notices of the Royal Astronomical Society (MNRAS), 433, 295 (**Figures**).

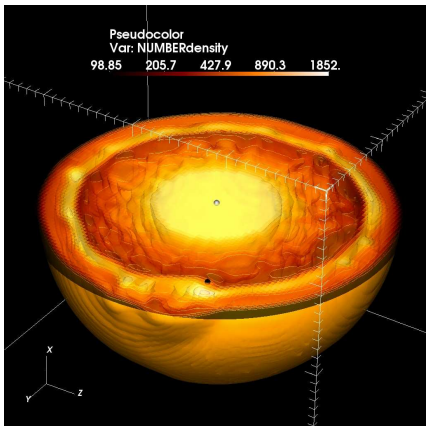
• *On the structure and stability of magnetic tower jets,* Huarte-Espinosa et al., 2012, The Astrophysical Journal, 757, 66.

• *Interaction of Fanaroff-Riley class II radio jets with a randomly magnetized intra-cluster medium*, Huarte-Espinosa et al., 2011, MNRAS, 418, 1621.

Visualization: Visit, IDL, Dislin, Gnuplot.



Disk about a star



Giant star and a smaller one inside it

Awards

2012-13 Alloc Principal investigator (PI) and co-PI on 5 awarded proposals for super computing time, 6.8+ million hours, Extreme Science and Engineering Discovery Environment (xsede.org).

2013 Fellowship "Gravity Theory Prize Postdoctoral Fellowship", University of Maryland (offer received, but I took another opportunity).

2010 Prize Best delivered and most scientifically relevant talk, Asymmetric Planetary Nebulae V, international conference, Windermere UK

2005 Scholarship Ph.D. granted by CONACyT (Mexico) to study at Cambridge University, UK.

2004 Diploma Best grades of the class, equivalent of MSc. with distinction in Physics, Institute of Astronomy UNAM, Mexico City.

Outreach Research videos in AstroBear's channel, http://youtu.be/4j8YqMHlt4g.

Languages English (fluent), Spanish (mother tongue) and German (basic).

Hobbies Play squash, tennis, bicycling, cross-fit, Hungarian, drums, traveling, cooking.