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February 28, 2013

Professor Isabelle Baraffe
University of Exeter
Physics Astronomy

Dear Prof. Baraffe,

I would like to be considered for the **Postdoctoral Position in Computational Stellar Astrophysics (P44453/P44454)** at Exeter that you have advertised on the AAS job register under JRID44285. My background is in large-scale hydrodynamics simulations of (typically) convectively-driven, explosive astrophysical phenomena.

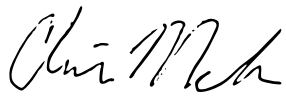
I am currently a postdoctoral researcher with Stan Woosley (woosley@ucolick.org; phone: +1 831-459-2976) at UCSC working on high-resolution simulations of Chandrasekhar mass SNIa models. The novel spin we have on this classic (unsolved) problem is that we are able to directly map the results of our low Mach number (MAESTRO) calculations of the ignition conditions directly into our compressible code (CASTRO) to evolve the buoyant flame in a realistic background turbulent environment.

As a graduate student under Mike Zingale (michael.zingale@stonybrook.edu; phone: +1 631-632-8225) at the State University of New York, Stony Brook, my research was in low Mach number hydrodynamic modeling of astrophysical fluid flows, using the MAESTRO code. In particular, I focused on the slow, thermonuclear-driven convection on the surface of a neutron star in the context of a Type I X-ray burst. In general, I am interested in all areas of complex astrophysical fluid flows, such as turbulence, convection and jets, as well as those involving thermonuclear reactions.

In all of my research I have worked closely with the applied mathematicians at Lawrence Berkeley National Laboratory in the Center for Computational Sciences and Engineering, in particular John Bell (jbbell@lbl.gov; phone: +1 510-486-5391) and Ann Almgren. These people have been the main developers of both of the codes I use, MAESTRO and CASTRO, as well as the underlying data format, BoxLib.

As such, please contact John, Mike, and/or Stan for reference information. Also, please find attached my CV including links to my published papers and a statement of research interests.

Sincerely,



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