Harvard University
60 Garden Street, MS-10
Cambridge, MA 02138

November 13th, 2015

Professor Eliot Quataert
Director, The Theoretical Astrophysics Center
University of California, Berkeley

Dear Professor Quataert and Members of the Selection Committee:

I am responding to your website's advertisement and Prof. Eugene Chiang's invitation to apply for a TAC Postdoctoral Fellowship at the University of California, Berkeley. I am currently a graduate student in the Harvard University Department of Astronomy and I will obtain my Ph.D. in May 2016. My research interests cover several aspects of planet formation and composition in the context of protoplanetary disk evolution. As a TAC Postdoctoral Fellow, I believe I can contribute to the academic excellence of The Theoretical Astrophysics Center through my research ideas and expertise, and by fostering collaborations with experts in the field.

More than one thousand extrasolar planets have been discovered within the past two decades, and their diversity in terms of mass, radius, location and composition provides an exciting field of research. For this purpose, it is thus crucial to explore and understand how planets obtain their compositions. Planets are born in protoplanetary disks, which means that their compositions are determined by and tightly linked to the structure and composition of the disk. However, the disk-planet connection, both from a dynamical and chemical perspective, has not yet been considered in detail. For my postdoctoral research, I will develop a holistic chemo-dynamical framework to explore how disk chemistry and dynamics, as well as the dynamics of nascent planets and planetesimals, regulate the compositions of mature giant planets. The Theoretical Astrophysics Center at UC Berkeley is the best place for me to pursue this research, due to its opportunities for valuable collaborations with experts in protoplanetary disks and exoplanets, such as Prof. Eugene Chiang, a world-leading planet formation theorist, or Prof. Alfred Glassgold, an expert in protoplanetary disk chemistry. Additionally, The Theoretical Astrophysics Center has strong ties with the larger UC Berkeley Department of Astronomy, which hosts leaders in detecting and characterizing worlds outside the Solar system, such as Prof. Paul Kalas and Prof. James Graham. Such collaborations present great prospects in connecting my theoretical research work with observations.

In the attached documents I have enclosed a statement of my research plans as a TAC Postdoctoral Fellow, a copy of my curriculum vitae, and a list of my publications. If you require additional information, please contact me via email.

Sincerely,

Ana-Maria Piso