

Department of Astrophysical and Planetary Sciences

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Department of Astrophysical Sciences
Princeton University • Princeton, NJ 08544

Dear Selection Committee,

I am writing to apply for a postdoctoral position in Princeton University's Department of Astrophysical Sciences. I am particularly interested in the Lyman Spitzer, Jr. Postdoctoral Fellowship and a Joint Princeton University and CCA Flatiron Postdoctoral Fellowship. Along with this letter, I have uploaded a curriculum vitae, publication list, and research statement to my application.

As a graduate research fellow at the University of Colorado, Boulder, I have led several theoretical studies which have investigated fundamental processes in stellar convection. I have performed two- and three-dimensional simulations of convection in both highly simplified systems and in more complex, fully compressible, stratified atmospheres. I have demonstrated that the nature of turbulent convection in stratified, compressible systems, or rotating systems, is fundamentally similar to more well-studied, simplified setups. I have also developed a tool which can equilibrate convective simulations using ten times fewer cpu-hours than traditional methods. More recently, I have investigated simulations of discrete convective downflows and learned how atmospheric density stratification affects their propagation. My doctoral studies have employed the *Dedalus* pseudospectral code and were performed in cutting edge, highly resolved (e.g., 2048×384^2 spectral modes), and highly turbulent regimes through the use of massively parallel techniques on modern supercomputers like NASA's *Pleiades*.

While I wrap up my graduate studies with Prof. Benjamin Brown (Univ. Colorado), I am working on three collaborative research projects which build on my previous work. First, along with Prof. Daniel Lecoanet (Princeton / Northwestern) and Dr. Lydia Korre (Univ. Colorado), I am learning how deeply individual downflows travel into convectively stable regions like the one beneath the Sun's convection zone. Second, I am collaborating with Prof. Geoff Vasil (Univ. Sydney) to show that thermal equilibration in rotating convection can cause convective flows at early and late simulation times to be in very different dynamical regimes. Finally, I am working with Dr. Nick Featherstone (Univ. Colorado) to determine if rotational constraint can be specified *a priori* in global convective simulations in spherical geometry.

Princeton University is the perfect location for me to grow as a researcher while I continue to work towards my ultimate career goal of becoming a professor. I look forward to collaborating with experts in Princeton's Department of Astrophysical Sciences and at the IAS like Profs. Adam Burrows, Jeremy Goodman, Eve Ostriker, and James Stone, whose combined expertise in astrophysical magnetohydrodynamics, stellar evolution, and convection will be invaluable as I carry out my research plan. I further look forward to cross-disciplinary collaborations with experts of atmospheric convection like Drs. Nadir Jeevanjee and Leo Donner in Princeton's Geophysical Fluid Dynamics Laboratory.

Thank you for considering my application,
Evan H. Anders

A handwritten signature in black ink, appearing to read 'E. Anders', with a stylized, flowing script.

NASA Earth and Space Science Fellow
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