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Convective overshoot in the interiors of solar-type stars BENJAMIN BROWN, EVAN ANDERS, University of Colorado, KEATON BURNS, Massachusetts Institute of Technology, DANIEL LECOANET, Princeton University, JEFFREY OISHI, Bates College, GEOFFREY VASIL, University of Sydney
— Convection is an important phenomena in stars. Within stellar convection zones, the transport of heat, magnetic fields and other quantities is highly non-local. At the boundaries of convection zones, the stratification becomes stable and internal gravity waves dominate the dynamics. The extent to which convection overshoots into stably stratified regions is important for understanding the transport and storage of magnetic fields in solar-like dynamos. Here, using the Dedalus pseudospectral framework, we consider the properties of convective overshoot in simulations of fully-compressible convection at low Mach number in domains that span significant density stratifications. We find that little overshoot occurs under conditions typical for solar-type stars, limiting the role of convective overshoot in governing global-scale solar dynamos.

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