

Abstract Submitted  
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**Zombie Vortices: Angular Momentum Transport and Planetesimal Formation**<sup>1</sup> JOSEPH BARRANCO, San Francisco State University, PHILIP MARCUS, SUYANG PEI, CHUNG-HSIANG JIANG, University of California, Berkeley, PEDRAM HASSANZADEH, Harvard University, DANIEL LECOANET, University of California, Berkeley — Zombie vortices may fill the dead zones of protoplanetary disks, where they may play important roles in star and planet formation. We will investigate this new, purely hydrodynamic instability and explore the conditions necessary to resurrect the dead zone and fill it with large amplitude vortices that may transport angular momentum and allow mass to accrete onto the protostar. One unresolved issue is whether angular momentum transport is mediated via asymmetries in the vortices, vortex-vortex interactions, or acoustic waves launched by the vortices. Vortices may also play a crucial role in the formation of planetesimals, the building blocks of planets. It is still an open question how grains grow to kilometer-size. We will investigate the interactions of dust with vortices generated via our new hydrodynamic instability, and bridge the gap between micron-sized grains and kilometer-sized planetesimals.

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