

Indirect Constraints on Terrestrial Planets Orbiting White Dwarfs

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There is good evidence that carbon-deficient tidally-disrupted asteroids, occasionally even as massive as Ceres, have been accreted onto at least 7% of the white dwarfs in the Solar neighborhood. The same stars which accrete asteroids probably also harbor planets. Accretion of a terrestrial planet onto a white dwarf produces notable infrared, optical and X-ray signatures. Very tentatively, it seems that the ratio of asteroid-accreting white dwarfs to terrestrial-planet accreting white dwarfs is larger than 20,000. Either terrestrial planets are rare, or it is very difficult compared to asteroids to perturb planets into fatal orbits, an indirect constraint on the architecture and evolution of planetary systems.