

Andrew Vanderburg – Colloquium Seminar April 20, 2023
MIT

A Song of Ice and Fire: the Fate of Planetary Systems After Stellar Death

In the past 30 years, astronomers have discovered thousands of planets orbiting stars outside the solar system. Most of the exoplanets we know of today orbit stars that will eventually exhaust their nuclear fuel, expand into red giants, shed their outer layers, and contract into dense remnants called white dwarfs. How does the process of stellar death affect any orbiting planets in the system? I will review our knowledge of planets beyond the main sequence and discuss new insights gleaned from our discoveries of two very different systems: a disintegrating minor planet around WD 1145+017 and an intact giant planet candidate around WD 1856+534. I will conclude by discussing the prospects for habitability in white dwarf systems long after the host star's death and how with some luck, we may be able to test these ideas in the next decade.