



The Beginnings and Ends of Double White Dwarfs

Contribution ID: 14

Type: **Talk**

Do sub-Chandrasekhar mass white dwarf explosions occur in nature?

Thursday 4 July 2019 14:20 (20 minutes)

Carbon-oxygen WDs accreting a helium shell have the potential to explode in the sub-Chandrasekhar mass regime through the double detonation scenario, when a helium shell ignition propagates a shock wave into the the core of the WD causing a central ignition. I will present the results of a recent numerical parameter survey of hydrodynamic and radiative transport models of sub-Chandrasekhar mass white dwarf explosions. I examine a relationship between SiII velocity and luminosity which, for the first time, identifies a sub-class of observed supernovae that are consistent with these models. I will show the distinct observational signatures of sub-Chandrasekhar mass WD explosions predicted for early time, peak and nebular observations. I will also discuss the discovery of the peculiar Type I supernova, SN2018byg: the first observed sub-Chandrasekhar mass white dwarf explosion triggered by the ignition of a massive helium shell.

Author: POLIN, Abigail (UC Berkeley)

Co-authors: Prof. KASEN, Daniel (UC Berkeley); Dr NUGENT, Peter (Lawrence Berkeley National Laboratory)

Presenter: POLIN, Abigail (UC Berkeley)

Session Classification: Supernovae & their Aftermath