
Transformative Advances in our Knowledge of Accretion Physics of Accreting White dwarfs in Explosive Interacting Binaries

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Abstract

The powerful capabilities of the spectral synthesis codes developed by Ivan Hubeny and collaborators (TLUSTY, SYNSPEC, DISKSYN) have revolutionized the analysis of far ultraviolet spectra of accreting white dwarfs in interacting binaries, using orbiting observatories (IUE, HST (FOS, GHRS, STIS, COS), FUSE). These analytical tools have opened up a broad array of new insights into accretion physics in compact binaries and wider systems with giant donor companions. Specifically, detailed investigations of cataclysmic variables (CVs) (dwarf novae, nova-like variables, post-novae, recurrent nova, symbiotic variables, symbiotic novae) have yielded a treasure trove of physical parameters of the hot accreting components including surface temperatures, rotational velocities, chemical abundances, surface gravities, accretion rates). This has led to the construction of a big overall picture of accretion physics and CV evolution. Examples of these advances in the area of accreting white dwarfs will be presented. Numerous Ph.D dissertations, Masters theses, undergraduate research projects culminating in peer-reviewed publications for the students, have been spawned through the application of Ivan's public downloadable codes to FUV spectra.

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