

Abstract Submitted  
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**Theoretical Study of White Dwarf Double Stars**<sup>1</sup> AJIT HIRA, TED KOETTER, RUBEN RIVERA, JUAN DIAZ, Northern New Mexico College — We continue our interest in the computational simulation of the astrophysical phenomena with a study of gravitationally-bound binary stars, composed of at least one white dwarf star. Of particular interest to astrophysicists are the conditions inside a white dwarf star in the time frame leading up to its explosive end as a Type Ia supernova, for an understanding of the massive stellar explosions. In addition, the studies of the evolution of white dwarfs could serve as promising probes of theories of gravitation. We developed FORTRAN computer programs to implement our models for white dwarfs and other stars. These codes allow for different sizes and masses of stars. Simulations were done in the mass interval from 0.1 to 2.0 solar masses. Our goal was to obtain both atmospheric and orbital parameters. The computational results thus obtained are compared with relevant observational data. The data are further analyzed to identify trends in terms of sizes and masses of stars. We hope to extend our computational studies to blue giant stars in the future.

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