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TIME: Thursday 2:30 PM, Mar. 07, 2013 **LOCATION: A601 NAOC**

White Dwarf Stars as Probes of Physical and Astrophysical Processes

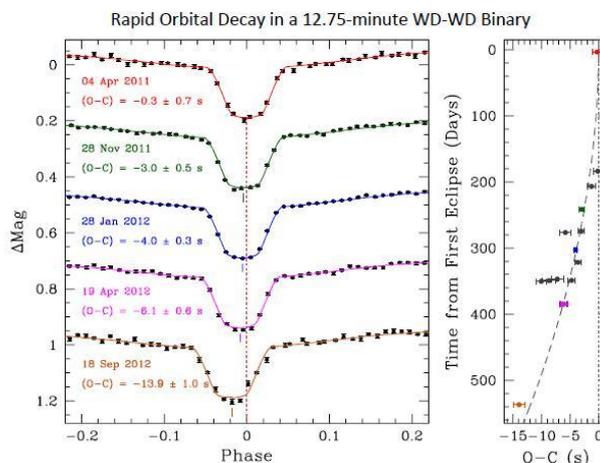


Dr. Michael Montgomery (Univ. Texas)

Dr. Michael Montgomery is currently a research scientist at the Department of Astronomy, Univ. of Texas at Austin, also the science director of Delaware Univ. Asteroseismic Research Center. He got his M.A from Princeton Univ in 1992 and PhD from U. Texas Austin in 1998. Dr. Montgomery has been devoting himself to asteroseismology/determination of internal structure of stars, especially the white dwarfs, for nearly 20 years. His scientific interests cover measuring neutrino/axion emission rates of pulsating white dwarfs; cooling theory/age dating of white dwarfs, non-linear phenomena, etc.

Abstract

In this talk I review the science we can do with white dwarf stars, from measuring the behavior of crystallization of a dense coulomb plasma to constraining the rate of gravitational radiation from a binary system. In addition, some white dwarfs pulsate and this provides us with an additional probe of their structure and the physics occurring in them. The Whole Earth Telescope (WET) is a global network of observers that routinely obtains comprehensive data sets, and this has revolutionized the study of these stars. White dwarf stars are the evolutionary endpoint of for 98% of all stars and thus contain a record of the history of star formation in the Galaxy. Their high surface gravities make chemical diffusion efficient in their envelopes, producing atmospheres composed predominantly of either hydrogen or helium. Our recent discoveries are the WD pulsators with carbon-dominated outer envelope and the extremely low-mass WD bridging to main-sequence stars. White dwarfs make useful chronometers; we can determine ages of individual white dwarfs and stellar populations. This talk will also show you my recently developed non-linear light curves fitting technique in deriving the thermal response timescale of the convection zone of WDs.



All are welcome! Tea, coffee, biscuits will be served at 2:15 P.M.

You are welcome to nominate speakers to Weimin Yuan (wmy@nao.cas.cn, Jan-Mar), Mei Zhang (zhangmei@bao.ac.cn, Apr-Jun), Licai Deng (licai@bao.ac.cn, Jul-Sep), Xuelei Chen (xuelei@cosmology.bao.ac.cn, Oct-Dec).