PDF versions of previous colloquia and more information can be found in “events” at http://gcosmo.bao.ac.cn/

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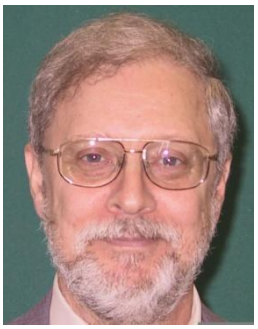
TIME: Thursday, 2:30 PM, Apr. 25, 2013 LOCATION: A601 NAOC

The Physics and Astrophysics of Type Ia Supernova Explosions

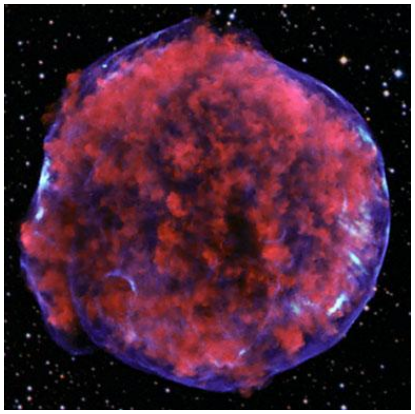


Prof. Mike Guidry

(University of Tennessee; Oak Ridge National Laboratory)

Mike Guidry is the author of approximately 200 journal publications, invited presentations, and textbooks that address topics in nuclear physics, computational science, advanced educational technology, astronomy, astrophysics, cosmology, general relativity, the mathematics of symmetry in physics, elementary particle physics, relativistic quantum field theory, and condensed matter physics. He has been the lead educational technology developer for a dozen major college textbooks in introductory physics, astronomy, biology, genetics, and microbiology, and in projects as diverse as training K-12 teachers to use educational technology effectively, explaining the science behind weapons of mass destruction for emergency first responders, and development of an online course in programming modern mobile devices for scientific and educational applications. His primary current research interests lie in development of new algorithms for solving large coupled sets of differential equations in scientific applications, understanding the mechanism for Type Ia supernovae, and developing new many-body techniques for understanding high-temperature superconductors and other stronglycorrelated electron systems. He has won various teaching awards and is responsible for many Web-based and conventional initiatives introducing and explaining science to the public.

Abstract



Supernovae exhibit a range of observational characteristics that historically has led to a rich set of observational classifications and sub-classifications. Despite the complexity of the observationally-based supernova taxonomy, we now believe that all supernovae are caused by just one of two basic mechanisms: (1) the gravitational collapse of the core of a massive star, or (2) a runaway thermonuclear explosion in a white dwarf. Type Ia supernovae are thermonuclear supernovae. The mechanism of Type Ia supernova explosions is of both practical and fundamental interest for the disciplines of physics, astrophysics, and cosmology. In this talk I will review our present understanding of the Type Ia supernova mechanism, including our own efforts to implement more realistic simulations of Type Ia events.

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), Mei Zhang (zhangmei@bao.ac.cn), Licai Deng (licai@bao.ac.cn), Xuelei Chen (xuelei@cosmology.bao.ac.cn), Shude Mao (smao@nao.cas.cn)