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The Fate of Non-Compact Companion Stars in Type Ia Supernovae Progenitor Systems

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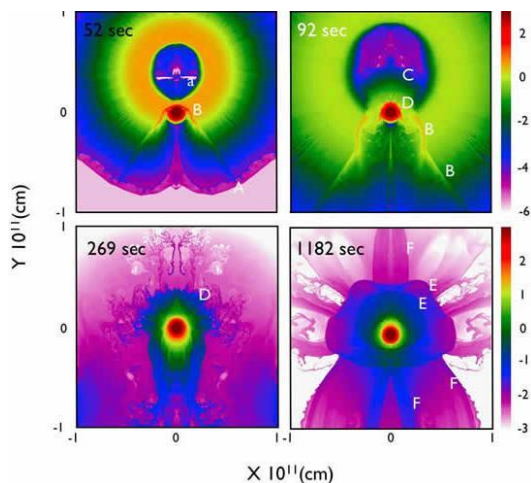


Ronald Taam is a Distinguished Research Fellow at the Academia Sinica Institute of Astronomy and Astrophysics (ASIAA) and Emeritus Professor of Physics and Astronomy at Northwestern University. He holds a PhD in Astronomy from Columbia University based on his work on the hydrodynamics of gas flows in close binary systems. He has served as chairperson of the Department of Physics and Astronomy at Northwestern University and currently serves as the Director of the Theoretical Institute for Advanced Research in Astrophysics and as the Managing Deputy Director of ASIAA. His research interests include the nature and evolution of close compact

binary systems and the nature of accretion flow in binaries containing stellar mass black holes and in active galactic nuclei containing supermassive black holes.

Abstract

It is generally accepted that Type Ia supernovae result from the thermonuclear explosion of carbon-oxygen white dwarfs in close binary systems. However, the nature of the progenitor system is unclear. In this talk, results of investigations will be reported in the framework of the so-called single degenerate scenario in which the transfer of mass from a non compact star to a white dwarf star leads to a supernova explosion. The interaction of the supernova ejecta with a binary companion is examined to determine the amount of mass lost from the star and the kick velocity induced. The properties and evolution of the post impact remnant star are calculated, which are affected by the amount and depth of the energy deposited by the interaction. Given an age of a supernova remnant, the results can be used to test the plausibility of candidate observed remnant companions.



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)