

Hans-Thomas Janka (Garching, Germany)
Stellar Evolution and Death: Physics and Astrophysics

The lectures will provide an introduction to stellar evolution theory with particular focus on the advanced evolution stages of massive stars and on the gravitational collapse and explosion that terminate the lives of these stars. The astrophysical role of such supernova and hypernova explosions as birth places of neutron stars and black holes will be described, their importance as sources of neutrinos, gravitational waves, and heavy elements will be addressed, and the nuclear and neutrino physics that are essential for understanding their dynamics and for modeling them theoretically will be discussed.

References:

Stellar Collapse, Ed. C.L. Fryer, Kluwer (Dordrecht), 2004.

S. Woosley and H.-Th. Janka, "The Physics of Supernovae", Nature Physics 1 (2005) 147 (astro-ph/0601261).

H.-Th. Janka, K. Langanke, et al.: "Theory of Core-Collapse Supernovae", in Hans Bethe Centennial Volume of Physics Reports, 442 (2007) 38 (astro-ph/0612072).