

ASTRONOMY DRAFT RULES 17

1. DESCRIPTION: Teams will demonstrate an understanding of stellar evolution and Type II Supernova Events
A TEAM OF UP TO: 2 APPROXIMATE TIME: 50 Minutes
2. EVENT PARAMETERS:
 - a. Each team may bring two computers/tablets, of any kind, a computer/tablet and a three ring binder, OR Two Three ring binders. If three ring binders are used they may be on any size containing information in any form and from any source, attached using the available rings. The information may be removed during the event. Sheet protectors and laminated sheets are allowed. NO Internet access is allowed during any part of this event.
 - b. Each team may bring two dedicated programmable calculators to use during this event.
3. THE COMPETITION:

Using information which may include Hertzsprung-Russell diagrams, spectra, light curves, motions, cosmological distance equations and relationships, stellar magnitudes and classification, multi-wavelength images (X-ray, UV, optical, IR, radio), charts, graphs and DS9/JS9 imaging analysis software, teams will complete activities and answer questions related to:

 - a. Stellar evolution, including stellar classification, spectral features and chemical composition, luminosity, blackbody radiation, color index and H-R diagram transitions, HII regions, red supergiants, Cepheids, semiregular variables, luminous blue variables, hypergiants, Wolf-Rayet stars, neutron stars, magnetars, pulsars, stellar mass black holes, eclipsing binaries, X ray & Gamma ray binary systems, Type II supernovas.
 - b. Use Kepler's laws, rotation and circular motion to answer questions relating to the orbital motions of binary systems; use parallax, spectroscopic parallax, and the distance modulus to calculate distance from Type I and Type II Cepheids, and Hubble's law to calculate distances to galaxies.
 - c. Identify and answer questions relating to the content areas outlined above for the following objects: RCW 103, IC 443, Alpha Orionis, HR 5171 A, SN W 49B, ASASSn-15lh, AG Carinae, S Doradus, SN 1987A, Geminga, NGC6357, NGC 7822, M82 X-2, PSR B0355+54, DEM L241, Circinus X-1.
4. SCORING: All questions will have been assigned a predetermined number of points. The highest score wins. Selected questions will be used to break ties.