SAS Honors Seminar 259: Extraterrestrial Life

9/22/2008
Star formation in Eagle Nebula

Star-Birth Clouds • M16

HST • WFPC2

PRC95-44b • ST ScI OPO • November 2, 1995
J. Hester and P. Scowen (AZ State Univ.), NASA
Star formation in Orion

Trapezium Cluster • Orion Nebula
WFPC2 • Hubble Space Telescope • NICMOS

NASA and K. Luhman (Harvard-Smithsonian Center for Astrophysics) • STScI-PRC00-19
“Proplyds” in Orion

Protoplanetary Disks
Orion Nebula

HST · WFPC2

PRC95-45b · ST ScI OPO · November 20, 1995
M. J. McCaughrean (MPIA), C. R. O’Dell (Rice University), NASA
Two kinds of supernovae

Type I: a white dwarf in a binary system is pushed “over the edge” (Chandrasekhar limit = 1.4 solar masses) by the addition of just a bit too much mass from a companion. These produce lots of Fe.

Type II: a very massive star undergoes core collapse when it is unable to derive any more energy from nuclear fusion. These produce lots of “alpha elements” (Ca, Mg, etc.).
Components of a galaxy
HR diagrams

NGC 7789

47 Tuc
Wednesday's field trip (9/24)

Deep Sea Microbiology Lab (Prof. Costatino Vetriani)
Institute of Marine and Coastal Sciences (Cook Campus)

Meet by 4:35pm in main lobby, or (if late) look upstairs near room 204G.

Ask lots of questions!
Reading for Wednesday

Bennett & Shostak 5.5, 9.4 – background on extremophiles
Vetriani et al. (2005) – example of our host's work on extremophile microbes – read all but “Materials and Methods” section

Web site will have a reading guide (later this evening).

No formal discussion, but use this reading as basis for questions during the field trip.
Reading for next Monday (9/29)

Bennett & Shostak 3.3, 3.5, 4.6 – background on solar system
Stevenson (2001) – background on Jupiter's moons
Canup & Ward (2002) – proposed model for formation of Jupiter's moons – read only abstract, §1, and §4
Canup & Ward (2006) – generalization of 2002 paper – read only first page, figure captions, and last paragraph

Web site will have a reading guide (forthcoming).
Response paper for Monday (9/29)

Describe one or more aspects of our visit to Professor Vetriani's deep sea microbiology lab that you found especially interesting or surprising.