

TALENT: TRAINING IN ADVANCED LOW ENERGY NUCLEAR THEORY

COURSE 7: NUCLEAR THEORY FOR ASTROPHYSICS

WEEK 1: MAY 26-MAY 30

MONDAY, MAY 26

✚ Memorial Day

TUESDAY, MAY 27

✚ Arrival Day

WEDNESDAY, MAY 28

- ✚ 08:00-08:30 Richard Cyburt: Welcome Introduction
- ✚ 08:30-09:30 Brian Fields: The Cosmic History of Baryonic Matter & Solar System Abundances
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 Raph Hix: Introduction to Nuclear Reaction Networks
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Individual Exercises: Reaction Network Code
- ✚ 15:30-16:30 Coffee Break (available throughout all exercise time)
- ✚ 16:30-18:00 Individual Exercises: Reaction Network Code
- ✚ 18:00-22:00 Welcome Reception Dinner @ Beggar's Banquet

THURSDAY, MAY 29

- ✚ 08:30-09:30 Brian Fields: Introduction to Stars
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 Raph Hix: Introduction to Hydrodynamics
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Individual Exercises: Hydrodynamics Code
- ✚ 15:30-16:30 Coffee Break (available throughout all exercise time)
- ✚ 16:30-18:00 Individual Exercises: Hydrodynamics Code

FRIDAY, MAY 30

- ✚ 08:30-09:30 Brian Fields: Post-main Sequence Evolution: Low/Intermediate mass stars
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 Brian Fields: Post-Main Sequence Evolution: Massive stars and Supernova
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Individual Exercises: Hydro/Network Code
- ✚ 15:30-16:30 Coffee Break (available throughout all exercise time)
- ✚ 16:30-18:00 Project 1 Group Assignments and Pre-game
- ✚ 18:00-22:00 Lansing Lugnuts game and BBQ

WEEK 2: JUNE 2-7

MONDAY, JUNE 2

- ✚ 08:30-09:30 Brian Fields: Introduction to Cosmology and the Early Universe
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 Raph Hix: Supernova Observations
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Group Exercises
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 16:30-18:00 Groups present Project 1 topics/Open Discussion and Questions
- ✚ Student Talks during afternoon

TUESDAY, JUNE 3

- ✚ 08:30-09:30 Brian Fields: Big Bang Nucleosynthesis
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 Raph Hix: The Core-Collapse Supernova Mechanism I
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Group Exercises
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 16:30-18:00 Group Exercises
- ✚ Student Talks during afternoon

WEDNESDAY, JUNE 4

- ✚ 08:30-09:30 Raph Hix: The Core-Collapse Supernova Mechanism II
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 Raph Hix: Nucleosynthesis in Core-Collapse Supernovae
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Group Exercises
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 16:30-18:00 Group Exercises
- ✚ Student Talks during afternoon

THURSDAY, JUNE 5

- ✚ 08:30-09:30 Hendrik Schatz: Analyzing the abundance patterns in stars
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 Hendrik Schatz: Nuclear Input I: Nuclear masses & lifetimes
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Group Exercises
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 16:30-18:00 Group Exercises
- ✚ Student Talks during afternoon

FRIDAY, JUNE 6

- ✚ 08:30-09:30 Hendrik Schatz: Nuclear Input II: Reaction rates
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-12:00 Project 1 Summary Presentations I
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Project 1 Summary Presentations II
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 1630-18:00 Project 2 Group Assignments and Pre-Platte

SATURDAY, JUNE 7

- ✚ 08:00-18:00 Platte River Trip

WEEK 3: JUNE 9-JUNE 13

MONDAY, JUNE 9

- ✚ 08:30-09:30 Gail McLaughlin: Review of Potential r-process sites
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 George Fuller: Neutrinos, the Weak Interaction and Primordial Nucleosynthesis I
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Group Exercises (NSCL Tour 14:30-15:00)
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 16:30-18:00 Groups present Project 2 topics/Open Discussion and Questions
- ✚ Student Talks during afternoon

TUESDAY, JUNE 10

- ✚ 08:30-09:30 Gail McLaughlin: Weak interactions in the r-process
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 George Fuller: Neutrinos, the Weak Interaction and Primordial Nucleosynthesis II
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Group Exercises
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 16:30-18:00 Group Exercises
- ✚ Student Talks during afternoon

WEDNESDAY, JUNE 11

- ✚ 08:30-09:30 Gail McLaughlin: Role of Nuclear Data in determining the Abundance Pattern
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 George Fuller: Weak Interaction pre-, peri- and post-collapse
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Group Exercises
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 16:30-18:00 Group Exercises
- ✚ Student Talks during afternoon

THURSDAY, JUNE 12

- ✚ 08:30-09:30 George Fuller: Neutrino Physics
- ✚ 09:30-10:00 Open Discussion and Questions
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-11:30 George Fuller: Outstanding Issues in Neutrino, Compact Object Physics and Cosmology
- ✚ 11:30-12:00 Open Discussion and Questions
- ✚ 12:00-14:00 Lunch
- ✚ 14:00-15:30 Group Exercises
- ✚ 15:30-16:30 Coffee Break (available throughout exercise time)
- ✚ 16:30-18:00 Group Exercises
- ✚ Student Talks during afternoon

FRIDAY, JUNE 13

- ✚ 08:30-10:00 Project 2 Summary Presentations I
- ✚ 10:00-10:30 Coffee Break
- ✚ 10:30-12:00 Project 2 Summary Presentations II
- ✚ 12:00-14:00 Farewell Pizza Lunch
- ✚ Departure

SATURDAY, JUNE 14

- ✚ Departure Day