

Corso di Laurea Specialistica in Scienze Fisiche
a.a. 2004-2005
Nucleosintesi
Titolare: Steve Shore

Programma.

1. Constraints on models and what is to be explained -- abundances of the elements: solar system (meteoritic, planetary atmospheres), stellar (stellar atmospheres), and interstellar and intergalactic determinations
2. Basic reaction theory for astrophysical processes (quick review)
3. Equilibrium stellar nucleosynthesis: overview of stellar interiors and processes emphasizing equilibrium nuclear reactions and energy generation, turbulent transport and mixing mechanisms, mass loss mechanisms, binary star evolution
4. Non-equilibrium processes: proton processes -- rp-process, explosive nucleosynthesis (XR novae, classical novae), accretion processing and symbiotic stars, non-equilibrium CNO and origin of peculiar light element abundances
5. Non-equilibrium processes: neutron processes -- s-process, r-process; supernova nucleosynthesis, processes in late stages of stellar evolution
6. URCA and lepton processes in stellar interiors
7. Chemical evolution of galaxies in the universe
8. Cosomological nucleosynthesis

Suggested readings: these will be described at the time abnd there will be material handed out and recommended during the lectures.