Lecture # 1, March 22

Intro

Matter @ supranuclear density ⇒ guiding principle: minimize energy.

Nuclear reaction: fusion vs fission

Neutron rich nuclei → β-decay & weak equilibrium

Neutron star x-section

crust / inner - outer

outer core n p e μ matter

inner core: hyperon matter ?
quark matter ?

A lot of extrapolation is needed ⇒ wants experimental constraints.

- ▷ nuclear properties
- ▷ nuclear data
- ▷ astrophysical data

Basic quantity: EOS

- ▷ contains dynamical information
- ▷ needed to predict neutron-star properties (both static & dynamical)

Introductory discussion on equation of state: Ideal gas → Van der Waals