

@Students: Nuclear physics — Nuclear Reaction, Structure and Astrophysics

Monday 5 December 2022 11:00 (40 minutes)

Nuclear Reaction, Structure and Astrophysics

Nuclear Physics has evolved in recent years studying nuclei from Fundamental Interactions to Structure and Stars, with wide areas of research in fundamental nuclear structure dealing with behaviours of nucleons inside the nuclei across the periodic table; nuclear reactions on different mechanisms of interactions, as well as nuclear astrophysics linking phenomenon that exists inside our galaxies and sun with the practical analogy through experimental investigations in the state-of-the-art nuclear facilities and theoretically using Supercomputers to predict many outstanding effects in the life beyond. Since the properties of nuclei, their existence, excitations and decays are all encoded in the nuclear chart, it represents the boundary condition for the complete evolution of properties of nuclear matter in neutron stars, supernovae, and mergers and from the Big Bang to today. The physics of nuclear forces, both strong and electroweak, therefore connects nuclear structure physics with nuclear astrophysics. Experimentalists and theorists work closely together on a variety of scientific topics for increased understanding with novel findings towards sustainable development goals. Summary of the basic nuclear physics knowledge including available theoretical codes will be discussed.

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