Nuclear Physics in Astrophysics XI



Contribution ID: 98

Type: Invited talk

Signatures of stellar nucleosynthesis in meteorites

Tuesday 17 September 2024 14:15 (25 minutes)

Meteorites, also known as the poor scientists' space probe, are valuable samples to study the solar nebula and its constituents. Certain primitive meteorites captured the composition of the solar system and have not been altered in the 4.5 billion years since its formation. These rocks also carry nucleosynthetic anomalies that allow us to deduce stellar processes in the solar neighborhood prior to solar system formation. In addition, primitive meteorites contain small presolar grains, i.e., bona-fide dust particles that condensed in the outflow and ejecta of dying stars and captured the nucleosynthetic fingerprint of their formation environment. These samples allow us to directly probe stellar nucleosynthesis and galactic chemical evolution of isotopes with high precision and thus allow us to constrain our theoretical understanding of these events and the underlying nuclear physics.

In my talk I will present an overview on how meteorite and presolar grain measurements allow us to decipher astrophysical processes. I will specifically present measurements that allow us to constrain rare processes that cannot be otherwise observed in nature, e.g., the formation and galactic chemical evolution of protonand neutron-rich isotopes.

Primary author:TRAPPITSCH, Reto (EPFL)Presenter:TRAPPITSCH, Reto (EPFL)Session Classification:Plenary Session