Contribution ID: **4** Type: **Oral**

The long-standing connection of BBN and Indirect measurements: the ^{3}He(n,p)^{3}H reaction at Big Bang energies

Tuesday, 6 September 2022 10:15 (15 minutes)

Nuclear reactions play a key role in the framework of the Big Bang Nucleosynthesis. A network of 12 principal reactions has been identified as the main path which drives the elemental nucleosynthesis in the first twenty minutes of the history of the Universe. Among them an important role is played by neutron-induced reactions, which, from an experimental point of view, are usually a hard task to be measured directly. Nevertheless big efforts in the last decades have led to a better understanding of their role in the primordial nucleosynthesis network. In this work we apply the Trojan Horse Method to extract the cross section at astrophysical energies for the ^{3}He(n,p)^{3}H reaction after a detailed study of the ^{2}H(^{3}He,pt)H three–body process. The experiment was performed using the ^{3}He beam, delivered at a total kinetic energy of 9 MeV by the Tandem at the Physics and Astronomy Department of the University of Notre Dame. Data extracted from the present measurement are compared with other published sets available in literature. Astrophysical applications will also be discussed in details.

Field of work

Primary author: PIZZONE, Rosario Gianluca (INFN LNS)

Presenter: PIZZONE, Rosario Gianluca (INFN LNS)

Session Classification: Tuesday - Session 1