Contribution ID: **14** Type: **Poster**

Measurement of Radiative Decay Width of the Hoyle State of 12C via 12C(p, p)12C Reactions

Tuesday, 20 August 2024 17:30 (1 minute)

The Hoyle state, second excited state of 12C at an excitation energy of 7.65 MeV, plays an important role in nucleosynthesis. Particularly the radiative decay of the Hoyle state is the doorway to the production of heavier elements in stellar environment. An exclusive experiment has been performed to measure the radiative decay width of the Hoyle state of 12C through the 12C(p, pγγ)12C reaction at 10.6 MeV beam energy. Triple coincidence measurement yields a value of radiative branching ratio, Γrad/Γ = 4.01 (30) × 10−4. The result has been reconfirmed by an independent experiment based on the complete kinematical measurement via. 12C(p, p)12C reaction at 11.0 MeV. Using our results together with the currently adopted values of Γπ(E0)/Γ and Γπ(E0), the radiative width of the Hoyle state is found to be 3.75 (28) × 10−3 eV.

Funding Agency

Email Address

tapan@vecc.gov.in

Presenter if not the submitter of this abstract

Primary author: TKRANA, Tapan Kumar (Variable Energy Cyclotron Centre)

Co-author: Dr PANDIT, Deepak (Variable Energy Cyclotron Centre)

Presenter: TKRANA, Tapan Kumar (Variable Energy Cyclotron Centre)

Session Classification: Poster Session

Track Classification: Nuclear Astrophysics