

Contribution ID: 111

Type: Contributed Talk

Radiative neutron capture rate of ${}^{11}B(n,\gamma){}^{12}B$ reaction from the Coulomb dissociation of ${}^{12}B$

Monday, 31 July 2023 15:30 (15 minutes)

Radiative capture reactions with light neutron-rich nuclei are known to be important constituents at sites of explosive nucleosynthesis while producing seed nuclei for the *r*-process. One such important reaction is the ${}^{11}B(n,\gamma){}^{12}B$ radiative neutron capture reaction, where the total reaction rate has significant contributions from the resonant (narrow-resonances) as well as the non-resonant continuum.

A paucity of experimental direct capture reaction data forces the determination of the rate of this reaction by indirect approaches. We will present the capture cross sections and the subsequent non-resonant rates of ¹¹B(n, γ)¹²B reaction calculated by using the Coulomb dissociation as an indirect method through the finite range distorted wave Born approximation (FRDWBA) theory. We will try to bring out the importance of accounting for the proper nuclear structure of the nuclei involved. The reaction rates at the relevant astrophysical temperatures would also be compared with proton and α -capture reaction rates of ¹¹B extracted from the literature.

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Session Classification: Monday Parallel Session: Few-body systems and astrophysics (Linke Aula)