
Contribution ID: **126** Type: **Oral**

# Triaxial odd-odd nuclei at proton drip-line

*Friday, 24 September 2021 10:35 (20 minutes)*

The spontaneous proton emission from the nuclei at the proton drip-line is a unique tool to investigate the nuclear structure properties in extreme conditions. Furthermore, as the astrophysical rapid proton capture (rp) process is the inverse of proton emission, the study of the latter can provide insights into the possible paths of the rp process [1-3]. However, due to the short half-life, there is a lack of data in the exotic region. Complexities surge when one encounters odd-odd nuclei with triaxial deformation. Therefore, a robust theoretical framework is required to encounter these nuclei, which relies on the least number of freely adjustable parameters. With this motive, recently, we have developed a nonadiabatic quasiparticle approach within the core-particle coupling framework to study the triaxial odd-odd nuclei [4]. The matrix elements of the odd-odd system are written in terms of core energies through an appropriate transformation such that the experimental data of the core can be incorporated directly [5]. In addition, the residual neutron-proton (np) interaction is included in two reliable ways, namely, a constant potential form and zero-range interaction. The developed approach has been successfully applied [6] to interpret the data of recently observed proton emitter $^{108}$I [3]. We establish that triaxiality plays a significant role in the proton emission from $^{108}$I. Furthermore, the residual np interaction is crucial to conclude the ground state spin and parity of this nucleus, which is $1^+$ state. This approach is quite reliable for studying the fine structure in proton emission and chirality in triaxial odd-odd nuclei.

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**Session Classification:** Session 11

**Track Classification:** Nuclear Structure, Reactions and Dynamics