

Status of Ξ -atomic X-ray hunting at J-PARC (invited talk)

Wednesday, April 2, 2025 4:30 PM (30 minutes)

Multi-strangeness systems, such as Ξ hypernuclei and double Λ hypernuclei, are of crucial importance for understanding baryon-baryon interactions and the nuclear matter equation of state. Xi -atoms, where a Ξ^- is trapped in atomic states around a nucleus, is a good playground to investigate the optical potential a Ξ^- feels in nuclei and thus to study the ΞN interaction and ΞN - $\Lambda\Lambda$ coupling strength by precise measurements of emitted X rays.

At J-PARC, a series of experiments have been performed to observe X rays from Ξ atoms. First, emulsion nuclides (such as Ag and Br) were used for Xi^- stopping targets as a byproduct of E07 experiment. Additionally, we also searched for Xi -C X rays from the diamond target of E07 experiment. Second, in E03 experiment, we are searching for Xi -Fe X rays. Presently, E96 experiment is running to observe Xi -C X rays by tagging stopped Xi^- in the active scintillation fiber target. I will show (preliminary) results and status of these experiments.

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Session Classification: Parallel Session (B)