

Search for tetraneutron by pion double charge exchange reaction at J-PARC

Tuesday, 26 July 2016 18:20 (30 minutes)

Very recently, four candidates of the tetraneutron state were observed in the $4\text{He}(8\text{He},8\text{Be})$ reaction at RIBF [1]. While the experiment will be continued aiming at higher statistics, the confirmation of such an exotic state with a different reaction is important. We propose a pion DCX (double charge exchange) reaction to populate a tetraneutron state via the $4\text{He}(\pi^-, \pi^+)$ reaction. In order to overcome a very low formation cross section, a high-intensity pion beam at the HIHR beamline, planned to be constructed in J-PARC, will be utilized. In this contribution, we will discuss the experimental concept. [1] K. Kisamori et al. Phys. Rev. Lett. 116, 052501 (2016).

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Session Classification: Few body Systems