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Spectroscopic experiment of Λ(1405) via in-flight d(K-n) reaction at J-PARC K1.8BR

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Λ(1405) is the lightest among negative parity baryon excitation states, which is hardly explained by a simple quark model. Since the Λ(1405) is located just below the KbarN threshold, there is a longstanding argument if it is a KbarN bound state. A chiral unitary model claims that the Λ(1405) consists of two states (KbarN state and Σπ state). According to the model, a pole position of the KbarN state is located at 1426-16i MeV, which is closer to the KbarN threshold. Experimental study of KbarN coupled to the Λ(1405) is desired. We investigate Λ(1405) spectrum shape directly generated in KbarN⟶Σπ by d(K-,n) reaction, where forward scattered neutron is measured. The (K-,n) reaction populates the isospin state of not 0 but also 1. We identify the three decay mode of the Λ(1405), Σ-π+, Σ+π-, and Σ0π0 so that isospin amplitude of I=0, 1 and their interference term in the spectrum are decomposed. In this contribution, we will present the preliminary result of the E31 first physics run to observe separated Σ±π∓ and Σ0π0 spectrum, which is scheduled in this coming June.

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