

Report of RCNP International Joint Usage/Joint Research

JOINT USAGE 004		PI: FUJIOKA Hiroyuki	
1	Title of research	Decay pion spectroscopy of $5\Lambda\Lambda$ at J-PARC using the LEPS-TPC	
2	List of collaborators	Hiroyuki Fujioka (Tokyo Institute of Technology) Tomokazu Fukuda (Osaka Electro-Communication University/RIKEN Nishina Center) Yosuke Taki (Tokyo Institute of Technology) Akane Sakaue (Kyoto University)	
3	Period of research	from October 2019 through March 2021	
4	Main location of collaboration implementation	SPRING-8	
5	Publication list	Articles	H. Fujioka et al., JPS Conf.Proc. 26 (2019) 023007
		Talks	<ul style="list-style-type: none"> ・藤岡 宏之, 『ダブルハイパー核 $7\Xi\text{H}$ と $5\Lambda\Lambda$ の分光実験』, 日本物理学会秋季大会 (山形大学), 2019 年 9 月. ・滝 鷹介, 『J-PARC E75実験のためのTime Projection Chamberの性能評価』, 日本物理学会秋季大会 (山形大学), 2019 年 9 月. ・藤岡 宏之, "Decay Pion Spectroscopy of the Lightest Double-Lambda Hypernuclei at J-PARC", 第 5 回クラスター階層領域研究会, 2020 年 9 月 ・藤岡 宏之, 『ダブル Λ ハイパー核で探る $\Lambda\Lambda$-3N 結合』, ELPH 研究会 C029「様々なフレーパー領域で探るクォーク・ハドロン多体系の分光と構造」(東北大学), 2020 年 11 月. ・Hiroyuki Fujioka, "Search for the lightest double-Λ hypernucleus, $5\Lambda\Lambda$, at J-PARC", Yamada Conference LXXII: The 8th Asia-Pacific conference on Few-Body problems in Physics (APFB2020)
		Theses	n/a
6	Description of the results and outputs	We performed an integrity assessment of the time projection chamber and the superconducting solenoid magnet, both of which were used in the LEPS experiment from October until December in 2019, and we have evaluated both can be operated without any problem. According to the result, we transported the time projection chamber to Tokyo Tech in November 2020. We plan to prepare its readout system at Tokyo Tech. Furthermore, we calculated magnetic field created by the solenoid magnet with OPERA-3d/TOSCA, by using the input files provided by the LEPS collaboration. It is necessary to evaluate the momentum resolution of charged pions.	