

E364

PROPOSAL FOR EXPERIMENT AT RCNP

12 July 2007

TITLE:**Test of the hybrid-emulsion system for the study of Double hypernuclei****SPOKESPERSON:**

Full Name Kazuma Nakazawa
 Institution Physics department, Gifu University
 Title or Position Professor
 Address 1-1 Yanagido, Gifu 501-1193, Japan
 Phone number +81-58-293-2249
 FAX number +81-58-293-2207
 E-mail nakazawa@gifu-u.ac.jp

EXPERIMENTAL GROUP:

Full Name	Institution	Title or Position
K.Imai	Advanced Science Research Center, Japan Atomic Energy Agency	P
K.Tanida	Seoul University	P
M.Hirose	Kyoto University	T
E.Hayata	Kyoto University	T
T.Kawai	Nagoya University	T
T.Sato	Nagoya University	T
T.Watabe	Nagoya University	T
T.Tsunemi	Kyoto University	PD
M.Hayata	Kyoto University	D3
A.Okamura	Kyoto University	D3
A.Sawa	Gifu University	M2

RUNNING TIME: Installation time without beam 3.0 days
 Setup and beam tuning time 1.0 days
 Data runs 1.5 days

BEAM LINE: Ring : WS course

BEAM REQUIREMENTS: Type of particle $^1\text{H}^+$
 Beam energy 200 MeV
 Beam intensity $\leq 1\text{fA}$
 Energy resolution $\leq 1\text{ MeV}$

BUDGET: Experimental expenses 0 yen

TITLE:**Test of the hybrid-emulsion system for the study of Double hypernuclei****SPOKESPERSON:** Kazuma Nakazawa**SUMMARY OF THE PROPOSAL**

We propose a test experiment with a 200MeV proton beam at WS course in order to evaluate the DSSD-emulsion hybrid system which will be used for the search of double hypernuclei (E07) at J-PARC. Observation of ten times more double hypernuclei than before is expected in E07. The key of the experiment is the DSSD-emulsion hybrid system, where Ξ^- tracks are measured with a high precision and then traced in the emulsion to their stopping points under a microscope.

The emulsion stack is placed on a newly constructed emulsion mover which moves the stack continuously to get an exposure of uniform beam density over a large area (33 cm \times 32 cm), while the DSSD (double-sided silicon strip detector) is fixed and placed just upstream of the emulsion. By using 200 MeV protons, which yield particles with momenta similar to Ξ^- in E07, we will test the performance of the hybrid system, especially the precision of the connection of tracks between the DSSD and emulsion.

For each emulsion stack, we plan to calibrate its position (relative to DSSD) by a low momentum proton beam itself at J-PARC. This method is employed for the first time. We plan to test this calibration method with the new emulsion mover and obtain data for the optimization the new calibration system.