

## Result of the $\Xi^-$ - atomic X-ray measurement at J-PARC E07

Thursday 30 June 2022 12:25 (15 minutes)

$\Xi^-$  atomic X-ray spectroscopy is a useful method for understanding the strong interaction in the  $S=-2$  sector. One of the experimental difficulties is that the in-flight decay of  $\Xi^-$  hyperon makes a huge background. We introduced a selection of  $\Xi^-$ -stop events using a nuclear emulsion, expecting a clean X-ray spectrum with a good significance. We performed the first  $\Xi^-$ -atomic measurement with a counter-emulsion hybrid method at the J-PARC K1.8 beam line (J-PARC E07).  $\Xi^-$  hyperons were produced via the  $(K^-, K^+)$  reaction. The magnetic spectrometers and silicon strip detectors analyzed the production of  $\Xi^-$  hyperon and  $\Xi^-$  tracks. The prediction of the position where  $\Xi^-$  hyperon hit at the emulsion surface by counters shortened the time for the emulsion image analysis. The  $\Xi^-$  atomic X rays were measured by the germanium detectors array, called Hyperball-X.

We show the  $\Xi^-$  Ag and  $\Xi^-$  Br atomic X-ray measurement results at J-PARC E07 experiment.

**Author:** FUJITA, Manami (JAEA)

**Co-authors:** EKAWA, Hiroyuki; HAYAKAWA, Syuhei; HAYASHI, Koji; HOSOMI, Kenji; ISHIKAWA, Yuji; KANUCHI, Honoka; KASAGI, Ayumu; KOIKE, Takeshi; NAKAZAWA, Kazuma; NISHIMURA, Naoki; TAMURA, Hirokazu; UKAI, Mifuyu; YAMAMOTO, Takeshi; YOSHIDA, Junya; YOSHIMOTO, Masahiro

**Presenter:** FUJITA, Manami (JAEA)

**Session Classification:** 4; Thu-IIa