High-resolution γ-ray spectroscopy of hyperfragments produced by stopped K^- reactions

K. Tanida[a] for KEK-PS E509 collaboration

[a] *The Institute of Physical and Chemical Research (RIKEN), Saitama 351-0198, Japan*

We will report on an experiment to measure γ rays from light hyperfragments produced by stopped K^- reactions (KEK-PS E509 [1,2]). Stopped K^- enables us to perform systematic study of hypernuclei by producing much more hyperfragments, including neutron rich ones, than other methods such as (π^+, K^+) or (K^-, π^-). Such systematic study will not only give us valuable information on the ΛN two body interaction, but also enable us to discuss the effect of ΛNN three body interaction if two body interaction which consistently explains level energies of hypernuclei cannot be obtained. Furthermore, in stopped K^- method, we can study the charge symmetry breaking in the ΛN interaction as mirror hypernuclei are equally produced.
The experiment was carried out at KEK-PS K5 beamline. Setup of the experiment was very simple, as we used several trigger counters to identify stopped K^- and a germanium detector system (Hyperball [3,4]) to measure γ rays. We used five experimental targets (Li, Be, ^{10}B, ^{11}B, C) in order to see target dependence of γ-ray yields. We will present preliminary results of the experiment.

References

[1] K. Tanida *et al.*, KEK-PS E509 proposal (2002).
[2] K. Imai and L. Zhu, Nucl. Phys. **A691** (2001) 127c.
[3] H. Tamura, Nucl. Phys. **A639** (1998) 83c.
[4] H. Tamura *et al.*, Phys. Rev. Lett. **84** (2000) 5963.