

Abstract Submitted  
for the HAW09 Meeting of  
The American Physical Society

**Mesonic decay of neutron-rich  $\Lambda$  hypernuclei** YOJI NAKAGAWA,  
KOUICHI HAGINO, Tohoku University — Although the pionic decay of  $\Lambda$  particle is suppressed in finite nuclei due to the Pauli principle, it still competes with the more dominant non-mesonic decay mode in light hypernuclei. In this contribution, we discuss the pionic decay of light neutron-rich  $\Lambda$  hypernuclei. To this end, we describe the structure of hypernuclei with the Skyrme-Hartree-Fock method, and compute the decay rate with the single-particle wave function so obtained. We apply this method to carbon isotopes, from  ${}_{\Lambda}^{13}\text{C}$  to  ${}_{\Lambda}^{23}\text{C}$ . Our calculation indicates that the decay rate for the  $\pi^{-}$  mode,  $\Lambda \rightarrow \text{p} + \pi^{-}$ , increases as a function of mass number, while that for the  $\pi^0$  mode,  $\Lambda \rightarrow \text{n} + \pi^0$ , is largely suppressed as expected. This is due to the fact that the proton single-particle potential is deepened for neutron-rich nuclei because of a strong proton-neutron interaction. We will also discuss the effect of the final state interaction between  $\pi$  meson and nuclei.

Yoji Nakagawa  
Tohoku University

Date submitted: 01 Jul 2009

Electronic form version 1.4