Abstract Submitted
for the HAW05 Meeting of
The American Physical Society

**Pairing Energies of the High-Spin Isomers in N=83 Isotones** A. ODAHARA, Nishinippon Inst. of Tech., Japan, Y. GONO, RIKEN, Japan, T. FUKUCHI, Rikkyo Univ., Japan, Y. WAKABAYASHI, Kyushu Univ., CNS Univ. of Tokyo, Japan, H. SAGAWA, Univ. of Aizu, Japan, W. SATULA, Univ. of Warsaw, Poland, W. NAZAREWICZ, Univ. of Tennessee, Oak Ridge Nat. Lab., USA — High-spin isomers in $N$=83 isotones have been systematically studied. Excitation energies of these isomers locate between 8.5 and 9.0 MeV. Their spins and parities are $49/2^+$ and $27^+$ for odd and odd-odd nuclei, respectively. Life times range between $\sim$10ns and $\sim\mu$s. High-spin isomers have stretch coupled configurations resulting from the breaking of a neutron magic 82 core, such as $[\nu(\mathrm{f_{7/2}h_{9/2}i_{13/2}})\ \pi\mathrm{h_{11/2}}^2]_{49/2}{}^+$ for odd nuclei and $[\nu(\mathrm{f_{7/2}h_{9/2}i_{13/2}})\ \pi(\mathrm{d_{5/2}^{-1}h_{11/2}}^2)]_{27}{}^+$ for odd-odd nuclei. These high-spin isomers have oblate shapes and are called to be high-spin shape isomers. The proton pairing correlations of high-spin isomers are empirically extracted for the first time by using the excitation energies of these isomers as well as binding energies, based on the odd-even mass difference. The experimental pairing correlations of high-spin isomers are found to be almost the same as those of the ground states in $N$=83 isotones. Theoretical studies of the excitation energies and the pairing correlations of high-spin isomers are also performed and compared with the experimental data.

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Date submitted: 21 May 2005 Electronic form version 1.4