

Abstract Submitted
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Compact High Resolution Isobar Separator for Decay Spectroscopy A. PIECHACZEK, Louisiana State University, V. SHCHEPUNOV, H.K. CARTER, J.C. BATCHELDER, UNIRIB, Oak Ridge Associated Universities, E.F. ZGANJAR, Louisiana State University, S.N. LIDDICK, University of Tennessee, H. WOLLNIK, IONTECH, B.O. GRIFFITH, Oak Ridge Associated Universities — A compact isobar spectrometer and separator, based on the Multi-Pass-Time-of-Flight (MTOF) principle, is being developed by the University Radioactive Ion Beam (UNIRIB) Consortium. Using N_2 as sample gas, a mass resolving power of 113,000 (FWHM) and a transmission of $\sim 50\%$ have been achieved after a time-of-flight of 9.7 ms. Coupled to the UNISOR mass separator at HRIBF, MTOF will provide isotopically pure samples of species around ^{100}Sn , of neutron deficient rare-earth nuclei and of neutron-rich nuclei for use in decay studies and mass measurements. With beam cooling and bunching, we expect a mass resolving power (FWHM) of $\sim 400,000$, transmission of $\sim 25\%$ and isobaric suppression of adjacent elements $\sim 40,000$. As a by product, MTOF will determine the masses of nuclei investigated with accuracies of 10^{-6} , or about 100 keV for a mass $A = 100$ nucleus. Spectra demonstrating the separation of stable nuclides using a Bradbury-Nielsen gate will be shown.

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