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Identification of the ^{109}Xe $\rightarrow$ ^{105}Te $\rightarrow$ ^{101}Sn alpha-decay chain S.N. LIDDICK, R. GRZYWACZ, C. MAZZOCCHI, C.R. BINGHAM, G. DRAFTA, A. KORGUL, M.N. TANTAWY, University of Tennessee, R.D. PAGE, I.G. DARBY, D.T. JOSS, J. THOMSON, University of Liverpool, K.P. RYKACZEWSKI, C.J. GROSS, ORNL, J.C. BATCHELDER, UNIRIB, C. GOODIN, J.H. HAMILTON, J.K. HWANG, K.. LI, Vanderbilt, S. ILYUSHKIN, J.A. WINGET, Miss State University, K. LAGERGREN, W. KROLAS, JIHIR, A.A. HECHT, Maryland University — The existence of a region of alpha emitting nuclei above ^{100}Sn is due to the presence of the Z=N=50 shell closures. The region is a fertile area to investigate possible enhanced correlations between neutrons and protons filling the same single-particle orbits and could lead to the observation of superallowed alpha decay as an approach is made towards ^{100}Sn. Nuclear structure studies in this region are problematic due to both a low probabilty for the production of neutron-defficient isotopes and the difficulty in detecting short-lived alpha decaying nuclei. The new isotope ^{109}Xe was produced at the HRIBF at Oak Ridge National Laboratory in the ^{58}Ni(^{54}Fe,3n) fusion evaporation reaction. A digital electronics aquisition system was used to identify ^{105}Te through the ^{109}Xe$\rightarrow$^{105}Te $\rightarrow$^{101}Sn alpha-decay chain. This marks the closest approach to the N = Z line above ^{100}Sn. The superallowed character of the alpha decay of ^{105}Te and the prospects for reaching the alpha-decay chain ^{108}Xe$\rightarrow$^{104}Te $\rightarrow$^{100}Sn will be discussed.

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