

## First Results from the Stopped Beam Isomer RISING Campaign at GSI

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We report the first results from a major new initiative of experiments focussed on the study of the internal structure of nuclei at the extremes of N:Z ratio using isomer spectroscopy. These experiments represent the first of the Stopped Beam section of the *Rare Isotopes Investigations at GSI* (RISING) project. Exotic nuclei were synthesised using relativistic projectile fragmentation of  $\sim 500 \rightarrow 1000$  MeV/u beams of  $^{107}\text{Ag}$ ;  $^{208}\text{Pb}$ ; and  $^{58}\text{Ni}$  provided by the SIS synchrotron at GSI. An overview of the experimental technique will be given, together with the in-beam performance of the new array and future research plans for the collaboration. Selected highlights of the initial experimental results from this highly successful campaign will also be presented, including the decay properties of newly identified isomers in and around the heavy N=Z=43 system  $^{86}\text{Tc}$  which demonstrates T=1-T=0 proton-neutron pairing competition in N=Z nuclei as well as studies of cross section/isomeric ratio in this region close to the proton drip line; the first identification of proton-hole excited states in the N=126 nucleus  $^{204}_{78}\text{Pt}$ ; and studies of mirror symmetry in the  $T_z = \pm 1$  systems  $^{54}_{28}\text{Ni}_{26} - ^{54}_{26}\text{Fe}_{28}$  including isomeric proton radioactivity from  $^{54}\text{Ni}$ .