T=1 and T=0 states in the N=Z=43 nucleus, ^{86}Tc*

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The low-lying structure of ^{86}Tc has been studied using isomer-decay spectroscopy at GSI in the first experiment of the Stopped-Beam phase within the Rare ISotope INvestigation at GSI (RISING) campaign. Following projectile fragmentation of a 750 MeV/u beam of ^{107}Ag, reaction products were separated and unambiguously identified using the FRagment Separator (FRS) in combination with its ancillary detectors. The ions were made to stop in a plastic stopper at the final focus of the FRS in the centre of the Stopped RISING γ-ray spectrometer. This high-efficiency, high-granularity array consists of 15 germanium cluster detectors in a compact configuration which provides a full photopeak efficiency in excess of 15% at 1.3 MeV. Internal decay of the previously identified [1] microsecond isomer in ^{86}Tc was confirmed with the addition of two previously unobserved γ-rays which help to determine the excitation energy and spin of the isomeric state. As in other heavy odd-odd N=Z nuclei a notably lower density of states below 1 MeV excitation energy compared with neighbouring odd-odd nuclei away from the N=Z line [2] is observed with the lowest T=0 state identified in the preliminary analysis being a $J^{\pi}=3^{+}$ state located 1176 keV above the T=1 [3] groundstate. Results from this experiment will be discussed along with assignments of structure made from shell model calculations and systematics of N=Z nuclei.

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