III WONP -1997

Energy levels in ^{101} Ru from the decay of ^{101} Tc

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The level structure of ^{101} Ru has been investigated by studying the gamma rays emitted following the beta decay of ^{101} Tc ($T_{1/2}$ = 14.2 minutes).The single spectra were taken using a Ge detector of 35 cm^3 with energy resolution of 1.89 keV for the 1332 keV transition of ^{60} Co and a 572 - ORTEC amplifier in pile-up rejection mode.The background radiation was diminished using a lead shilded .The detector was calibrated for energy and effiency through the measurements of standard sources.

The radioactive sources were obtained by irradiation 5 mg of enriched molybdenium metal (97% for ^{100}Mo) for a period of 5 minutes in the IEA - R1 reactor at IPEN-São Paulo, in a thermal neutron flux of 10^{13} $n.cm^{2}.s^{-1}$. The samples were allowed to stand for 45 minutes to permit decay of ^{101} Mo ($T_{1/2}$= 14, 5 minutes) formed during the irradiation.

In this experiment, the direct gamma-ray spectrum from about 70 keV to 2.0 MeV, were recorded during 75 hours of live counting.In order to identify the origin of γ-rays spectra were accumulated through five successive half-lifes.

The energy and relative intensities of 31 gamma rays have been determined with a better overall precision than previously. The level energies were obtained through a least-squares fit of the all transitions placed in the decay scheme.

On the basis of beta and gamma selection rules and log ft values spin assigments have been suggested or confirmed for a number of the levels.