Measurement of proton reaction cross sections on Tantalum and Tungsten between 10 and 36 MeV

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Abstract

High quality nuclear reaction cross section data is important to allow high quality simulations and prediction of quantities such as activity and dose rate. The increasing use of proton accelerators for medical applications as well as at research institutions means there is a need for proton cross section data at a range of energies. In this work we focus on Ta and W proton cross section in the range 10-36 MeV. Thin foils are irradiated by protons at the MC40 cyclotron facility at the University of Birmingham with mono-energetic proton beams. After short irradiations they are transferred to HPGe detectors and the gamma spectrum is measured. This information is then used to calculate the differential cross sections for several reactions at the different energies.

Introduction

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