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# Ordinary muon capture studies by means of gamma-spectroscopy

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HPGe detectors were used to make a precise measurement of the γ-ray spectrum produced following ordinary (non-radiative) capture of negative muons by isotopically-enriched
(48Ti, 76Se, 82Kr, 106Cd and 150Sm) and natural tartegets (Se, Kr, Cd and Sm). By investigating energy and time distributions, the lifetime of negative muons in the different isotopes was deduced. A detailed analysis of the intensity of the γ-lines enabled the extraction of the relative yields of several daughter nuclei. The partial rates of muon capture to numerous excited levels of the 48Sc, 76As and 106Ag isotopes (considered to be virtual states of the intermediate odd-odd nuclei in the ββ decay of 48Ca, 76Ge and 106Cd respectively) were also extracted. These rates are important as an experimental input for the theoretical calculation of the nuclear matrix elements in ββ decay.

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