^{44}Ti half-life (continued)

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The ^{44}Ti nuclide ($t_{1/2}$ = 59.1 ± 0.3 y, [1]) plays an important role as one of the rare long-term observables of supernovae (SN) remnants by γ-ray astronomy ([2], see also a very recent observation [3]) and as a key diagnostics for our understanding of explosive nucleosynthesis [4]. The half-life of ^{44}Ti, of the same order of magnitude as the mean time between SN events in the Galaxy, makes it possible to probe a single SN event, at least in the Earth vicinity, and assuming knowledge of distance, age and photon flux, allows one in principle to estimate the mass of this specific nuclide produced in the event. ^{44}Ti half-life was determined several times since the 1960's (see [1] for a compilation) with large discrepancies between early measurements and later ones, probably due to unaccounted systematic effects. We are presently extending, after a gap of about ten years, the series of measurements performed between 1992 and 2006 [5], based on the ratio of activities of a ^{44}Ti source mixed with a ^{60}Co ($t_{1/2}$= 5.2711 ± 0.0004 y [6]) source. The aim of the measurement is to confirm the value ($t_{1/2}$(^{44}Ti) = 58.9 ± 0.3 y) of this previous determination and possibly reduce its uncertainty. Current results of the experiment will be presented. We are grateful to R. Diehl for his suggestion and encouragement to perform this measurement.

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