

^{227}Pa

In “Artificial collateral chains to the thorium and actinium families” Giorso et al. discovered ^{227}Pa in 1948 ([1948Gh01](#)). Thorium targets were irradiated with 80 MeV deuterons from the Berkeley 184-inch cyclotron. The α -decay chains beginning at ^{227}Pa were measured following chemical separation. “Prominent soon after bombardment are a number of alpha-particle groups, which decay with the 38-minute half-life of the protactinium parent. These are due to the following collateral branch of the $4n+3$ radioactive family: ${}_{91}\text{Pa}^{227} \xrightarrow{\alpha} {}_{89}\text{Ac}^{223} \xrightarrow{\alpha} {}_{87}\text{Fr}^{219} \xrightarrow{\alpha} {}_{85}\text{At}^{215} \xrightarrow{\alpha}$.” The half-life was measured as 38 min for ^{227}Pa .

Adapted from reference ([2013Fr03](#))

[1948Gh01](#) A. Giorso, W. W. Meinke, and G. T. Seaborg, Phys. Rev. **74**, 695 (1948).

[2013Fr03](#) C. Fry and M. Thoennessen, At. Data Nucl. Data Tables **99**, 345 (2013).

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