

## ${}^4\text{Li}$

An unbound state of  ${}^4\text{Li}$  was first reported by Cerny et al. in “ $\text{Li}^4$  and the excited levels of  $\text{He}^4$ ” in 1965 ([1965Ce02](#)). The Berkeley 88-in. cyclotron was used to accelerate protons to 43.7 MeV which then bombarded a target of separated  ${}^6\text{Li}$ .  ${}^4\text{Li}$  was produced in the (p,t) reaction and identified with a (dE/dx)-E counter telescope. “[The figure] presents a  $\text{Li}^6(\text{p,t})\text{Li}^4$  spectrum at  $15^\circ$ . Such data, taken between  $10^\circ$  and  $35^\circ$  in the laboratory, show a broad state which is unbound by  $2.9\pm 0.3$  MeV to  $\text{He}^3\text{-p}$  decay. (Though we shall denote the peak as the  $\text{Li}^4$  ground state throughout this report, it is probably not a single state.) The width of the unbound  $\text{Li}^4$  state is  $5.0\pm 0.5$  MeV at all angles.”

First evidence for the particle instability of  ${}^4\text{Li}$  was shown by Sheline in 1952 ([1952Sh44](#)).

Adapted from reference ([2012Th01](#))

- [1952Sh44](#) R. K. Sheline, Phys. Rev. **87**, 557 (1952).  
[1965Ce02](#) J. Cerny, C. Detraz, and R. H. Pehl, Phys. Rev. Lett. **15**, 300 (1965).  
[2012Th01](#) M. Thoennessen, At. Data Nucl. Data Tables **98**, 43 (2012).

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