

Auchampaugh et al's superseded (n,2n) datasets in EXFOR 12936

(N. Otsuka, J.M. Wang, 2023-09-30, CP-D/1091)

Note added to WP2024-20:

The superseded datasets “discovered” in China seemed valuable for us (This measurement is complementary with Frehaut’s measurement and unique for some (n,2n) reactions). After submission of Memo CP-D/1091, we brought this question to Manfred Drosch, who informed this question to Lynn Veese. Veese explained me his concern is about deviation of the $^{252}\text{Cf}(sf)$ prompt fission neutron spectrum (used in Gd detector calibration) from the actual (n,2n) neutron spectrum. Veese agreed with us for the following actions to this EXFOR entry on 6 October 2023:

- 1. Keep the Be dataset (12936.002) withdrawn with a comment like “The efficiency calibration assuming the $^{252}\text{Cf}(sf)$ prompt fission neutron spectrum as the outgoing neutron spectrum is probably completely wrong.”*
- 2. Cancel withdrawals for the other dataset (12936.003-009) with a comment like “The efficiency determined with the $^{252}\text{Cf}(sf)$ prompt fission neutron spectrum may not have been adequately corrected for the deviation from the actual outgoing neutron spectrum, and the dataset must be used with caution above ~18 MeV.”*

These corrections have been done in TRANS.1509.

The (n,2n) cross sections measured with a large Gd-loaded liquid scintillator tank by Auchampaugh, Drake and Veese in EXFOR 12936 were withdrawn by the last author on 10 October 1985.

STATUS (SPSDD) DATA WITHDRAWN, L.R.VEESE, 85/10/10.

These datasets are kept with STATUS=SPSDD and cannot be retrieved and plotted on the NDS EXFOR web retrieval system with the default setting.

In general, Auchampaugh et al. covers the energy above 14.7 MeV while Frehaut et al. covers the energy below 14.8 MeV, and hence they are complementary each other for evaluators. Some EXFOR users may want to utilize these datasets even if they are withdrawn by the author, and we would like to share their plots for your attention.







