

Zeitschrift: Helvetica Physica Acta
Band: 34 (1961)
Heft: [6]: Supplementum 6. Proceedings of the International Symposium on polarization phenomena of nucleons

Artikel: Polarization of neutrons from the Li7(p, n)Be7 reaction
Autor: Austin, S.M. / Darden, S.E.
DOI: <https://doi.org/10.5169/seals-513269>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 07.08.2025

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

Polarization of Neutrons from the $\text{Li}^7(p, n)\text{Be}^7$ Reaction

By S. M. AUSTIN, University of Wisconsin, and
S. E. DARDEN, University of Notre Dame

Using previously described methods [1], further polarization measurements have been performed on neutrons from the $\text{Li}^7(p, n)\text{Be}^7$ reaction. Angular distribution measurements of the polarization (P_n) were carried out at proton energies of 2.2, 2.6, and 3.0 MeV, covering angular ranges (laboratory system) of 30° to 70° , 30° to 115° , and 30° to 70° respectively. For the neutrons emitted at 50° , additional measurements have been made on the energy dependence of P_n between 1.95 and 3.00 MeV proton energy. The angular distribution data indicate that the polarization reaches a maximum in the vicinity of 60° . At a proton energy of 2.6 MeV, the polarization is near zero for angles of 105° and 115° , suggesting that two states with the same initial channel spin and $l_1 + l_2 \geq 2$ are contributing to the cross-section. As a function of energy, P_n at 50° has a minimum near 2.45 MeV and increases with decreasing proton energy to a maximum value of about 0.5 at 2.1 MeV, below which it decreases abruptly. For energies below 2.5 MeV, the observed variation with energy of P_n is similar to that calculated assuming the reaction proceeds primarily via a 3^+ and a 2^- state in Be^8 . If the level parameters which fit the total cross-section in this energy region are used, the calculations can be brought into qualitative agreement with experiment only by drastically altering the hard sphere phases near threshold. Fair agreement can also be obtained by introducing a 1^- level near threshold.

REFERENCES

- [1] STRIEBEL, DARDEN, and HAEBERLI, Nuclear Physics 6, 188 (1958).
- [2] NEWSON, WILLIAMSON, JONES, GIBBONS, and MARSHAK, Phys. Rev. 108, 1294 (1954).