Erratum: Measurement of the n-p elastic scattering angular distribution at $E_n = 10$ MeV [Phys. Rev. C 65, 014004 (2001)]

N. Boukharouba,[1] F. B. Bateman,[2] C. E. Brient,[3] A. D. Carlson,[2] S. M. Grimes,[3] R. C. Haight,[4] T. N. Massey,[3] and O. A. Wasson[2]

[1]*Department of Physics, University of Guelma, Guelma 24000, Algeria*
[2]*National Institute of Standards and Technology, Gaithersburg, Maryland 20899, USA*
[3]*Department of Physics and Astronomy, Ohio University, Athens, Ohio 45701, USA*
[4]*Los Alamos Neutron Science Center, Los Alamos National Laboratory, Los Alamos, New Mexico 87545, USA*

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The reported data are given for the mean angles measured rather than for the central angles. The data are normalized to the most recent Evaluated Nuclear Data File evaluated angle-integrated elastic-scattering cross section and refitted with a Legendre polynomial expansion.

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TABLE I. Relation of central angles to mean angles in the center of mass.

Central angle (degrees c.m.)	Mean angle (degrees c.m.)	Cross section (mb/sr)	Uncertainty (mb/sr)
180.00	175.24	78.06	0.65
155.94	155.49	76.93	0.39
131.89	131.70	76.20	0.40
107.86	107.76	75.36	0.42
83.85	83.84	73.75	0.45
59.87	59.83	73.15	1.23

In the article [1], the results for the cross-section measurements were referred to the central center-of-mass angle of the neutrons. The central center-of-mass angle is defined as the angle for the neutrons in the center-of-mass system for a proton striking the center of the detector. For all angles except the 0° proton telescope, these angles are close to the mean angles. For reference, we provide the mean angles in Table I. These are center-of-mass angles calculated by Monte Carlo integration of the scattering through the polypropylene foil using the measured angular distribution and a relativistic transformation from the laboratory to the center-of-mass system. The resulting new Legendre polynomial expansion coefficients a_1 and a_2 are, within uncertainties, the same as previously reported, as shown in Table II. The a_o coefficients differ as a result of the change in normalization from the Evaluated Nuclear Data File (ENDF)/B-V to ENDF/B-VII total cross section. The central angle data [1] were normalized to give a total cross section of 943.2 mb that corresponds to the total cross section for the ENDF/B-V evaluation [2].

TABLE II. Legendre polynomial coefficients for the reported and revised fits.

Coefficient	Original [1] (mb/sr)	Refit (mb/sr)
a_0	75.06 ± 0.43	74.36 ± 0.48
a_1	-2.58 ± 1.19	-2.83 ± 0.58
a_2	0.60 ± 0.95	0.29 ± 0.70
χ^2_ν	0.44	0.29

To renormalize the measured relative angular distribution to the current best value for the total cross section, the angular distribution was refitted to a second-order Legendre polynomial series. We have renormalized to a total cross section of 934.4 mb to correspond to the current value for the ENDF/B-VII evaluation [3], as shown in Table I. The MINUIT software package [4] and several well-tested linear least-squares Legendre polynomial fitting codes such as BCOEF [5] and FITLEG [6] were used to fit the data using both mean angles and the central angles. The results for the Legendre polynomial coefficients are indistinguishable for all of these codes and each method of reporting the angle. The fitted angular distribution now has reduced the uncertainties in the a_1 and a_2 coefficients compared with our previous fit. The a_0 was taken with its error from the ENDF/B-VII evaluation as it was not fit.

The χ^2 values of fits to the theoretical predictions for H(n,n)H scattering are virtually identical to the fit from the central angles [1]. The ratio $\sigma(180°)/\sigma(60°)$ is essentially unchanged, moving from 1.0628 to 1.0630. The quoted value for this ratio is 1.063 in the article. The conclusions from Ref. [1] remain unchanged.

[1] N. Boukharouba, F. B. Bateman, C. E. Brient, A. D. Carlson, S. M. Grimes, R. C. Haight, T. N. Massey, and O. A. Wasson, Phys. Rev. C **65**, 014004 (2001).
[2] A. D. Carlson and M. R. Bhat, *ENDF/B-V Cross Section Measurement Standards*, Brookhaven National Laboratory Report BNL-NCS-51619, 1982.
[3] A. D. Carlson *et al.*, Nucl. Data Sheets **110**, 3215 (2009).
[4] CERN, MINUIT function minimization and error analysis, CERN Program Library, Entry D506, 1998.
[5] Ohio University, The computer program BCOEF is a least-squares fit to Legendre polynomials developed and used at Ohio University for over 20 years.
[6] University of Kentucky, The program FITLEG is a least-squares fit to Legendre polynomials used for many years at the University of Kentucky to fit neutron scattering data.

