Suplementary materials to: "Empirical fits to inclusive electron-carbon scattering data obtained by deep-learning methods"

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I. NEURAL NETWORK VS. ELECTRON-CARBON SCATTERING DATA

In the following figures we compare the predictions of two neural network models A and B with the measurements of inclusive electron-carbon scattering data from Refs. [1–12], see Table I.

TABLE I. Summary of the data used in this analysis.

Reference	Abbrev.
Arrington *et al.* [1]	Arri1995
Arrington *et al.* [2]	Arri1998
Bagdasaryan *et al.* [3]	Bagd1988
Baran *et al.* [4]	Bara1988
Barreau *et al.* [5]	Barr1983
Dai *et al.* [6]	Dai2018
Day *et al.* [7]	Day1993
Fomin *et al.* [8]	Fomi2010
O'Connell *et al.* [9]	O'Con1987
Sealock *et al.* [10]	Seal1989
Whitney *et al.* [11]	Whit1974

[1] J. Arrington et al. Inclusive electron scattering from nuclei at x approximately = 1. *Phys. Rev. C*, 53:2248–2251, 1996.
[2] J. Arrington et al. Inclusive electron nucleus scattering at large momentum transfer. *Phys. Rev. Lett.*, 82:2056–2059, 1999.
[3] D. S. Bagdasaryan, M. K. Boyadzhian, G. B. Kazarian, K. P. A. Kechian, E. R. Markarian, G. G. Mkrtchian, O. P. Petrosian, I. A. Troshenkova, and V. O. Tatevosian. Measurement of the spectra of (e, e') scattering off ^{9}Be and ^{12}C nuclei in the inelastic region at $Q^2 \lesssim 0.4$ GeV$^2/c^2$. YERPHI-1077-40-88 (unpublished), 1988.
[4] D.T. Baran et al. Δ Electroproduction and Inelastic Charge Scattering From Carbon and Iron. *Phys. Rev. Lett.*, 61:400–403, 1988.
[5] P. Barreau et al. Deep Inelastic electron Scattering from Carbon. *Nucl. Phys.*, A402:515–540, 1983.
[6] H. Dai et al. First Measurement of the Ti$(e, e')X$ Cross Section at Jefferson Lab. *Phys. Rev. C*, 98(1):014617, 2018.
[7] D. B. Day et al. Inclusive electron nucleus scattering at high momentum transfer. *Phys. Rev. C*, 48:1849–1863, 1993.
[8] N. Fomin et al. Scaling of the F_2 structure function in nuclei and quark distributions at $x > 1$. *Phys. Rev. Lett.*, 105:212502, 2010.
[9] J. S. O'Connell et al. Electromagnetic excitation of the delta resonance in nuclei. *Phys. Rev. C*, 35:1063, 1987.
[10] R. M. Sealock et al. Electroexcitation of the delta (1232) in nuclei. *Phys. Rev. Lett.*, 62:1350–1353, 1989.
[11] R. R. Whitney, I. Sick, J. R. Ficenec, R. D. Kephart, and W. P. Trower. Quasielastic electron scattering. *Phys. Rev. C*, 9:2230, 1974.
[12] Omar Benhar, Donal Day, and Ingo Sick. An archive for quasi-elastic electron-nucleus scattering data. `http://discovery.phys.virginia.edu/research/groups/qes-archive/`, 2006.

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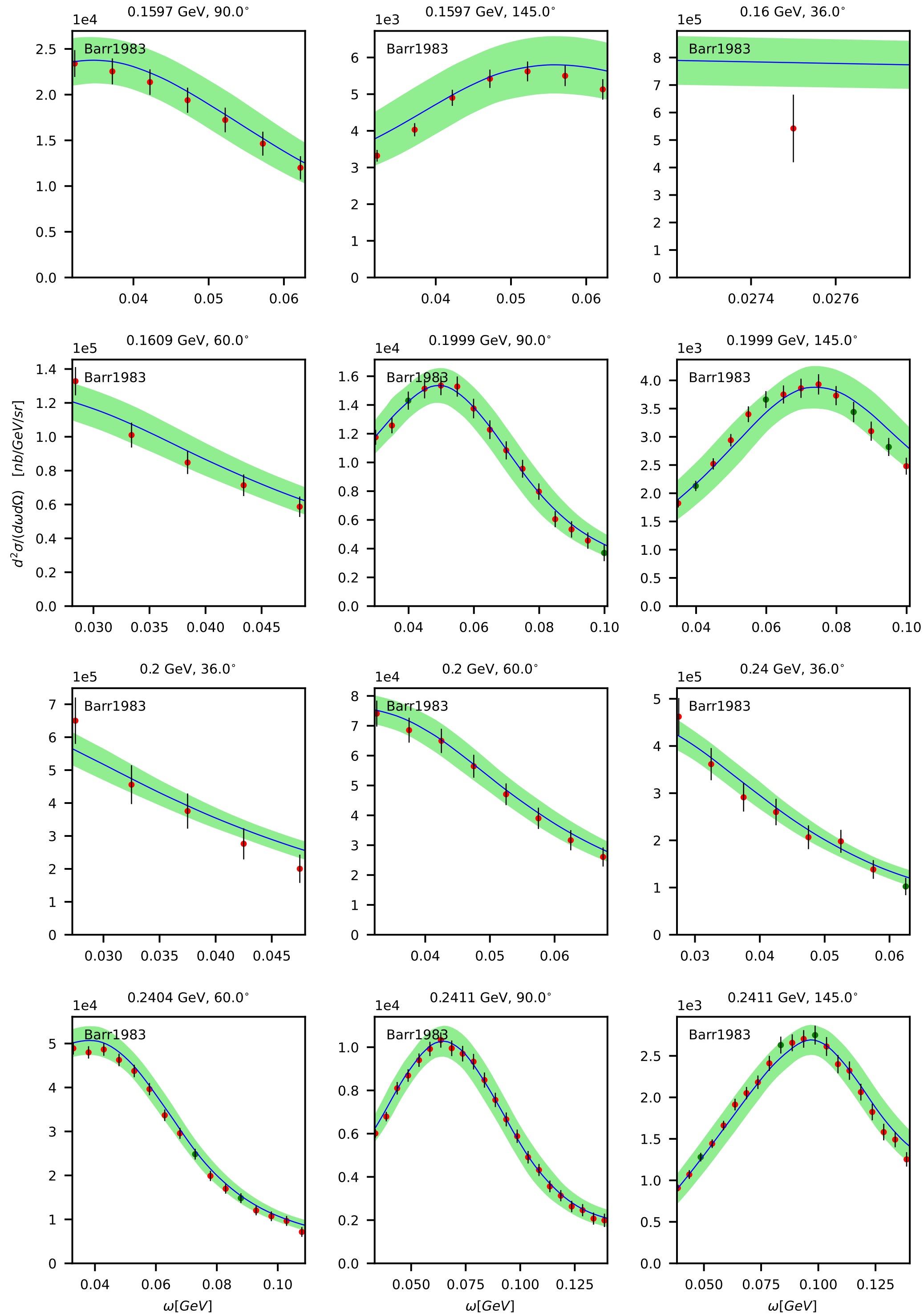

FIG. 1. Double-differential cross section $d^2\sigma/d\omega d\Omega$ for inclusive electron scattering on carbon. We compare the predictions of model A to the experimental data. The shaded areas denote the 1σ uncertainties. The panels are labeled with the beam energy and scattering angle values. The red (blue) points represent the training (test) dataset. The predictions are not rescaled according to the determined normalization parameters.

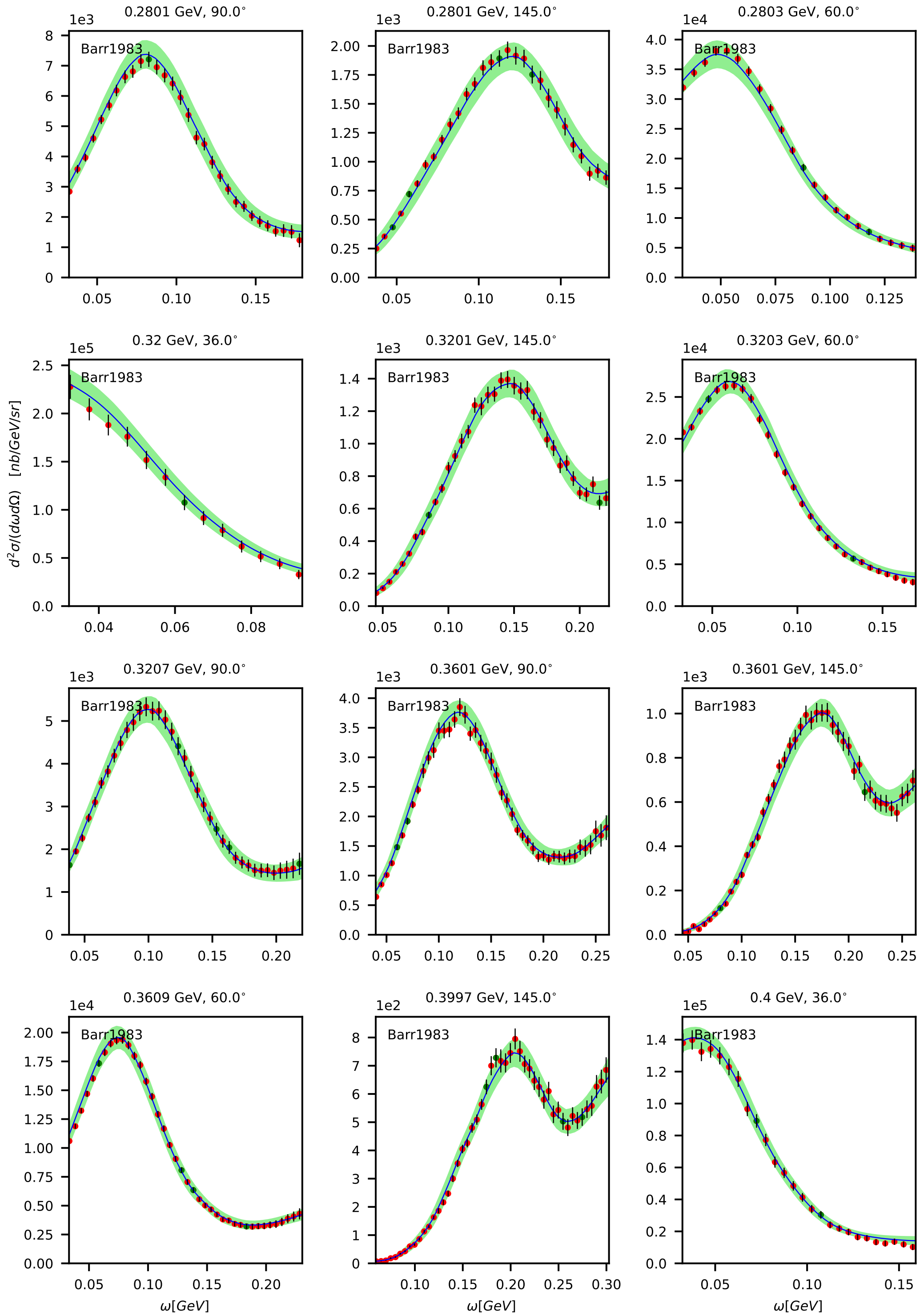

FIG. 2. Same as Fig. 1 - model A.

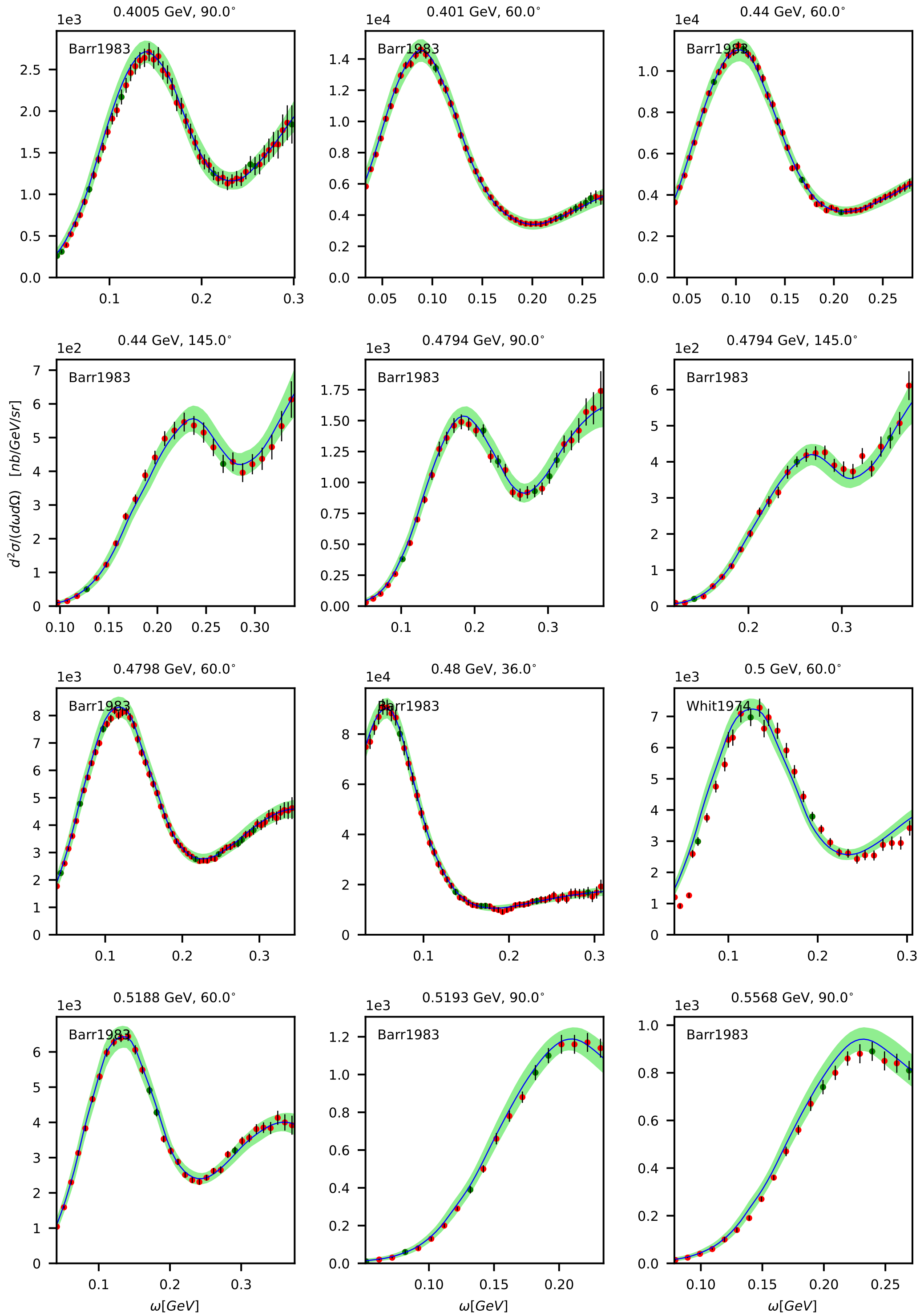

FIG. 3. Same as Fig. 1 - model A.

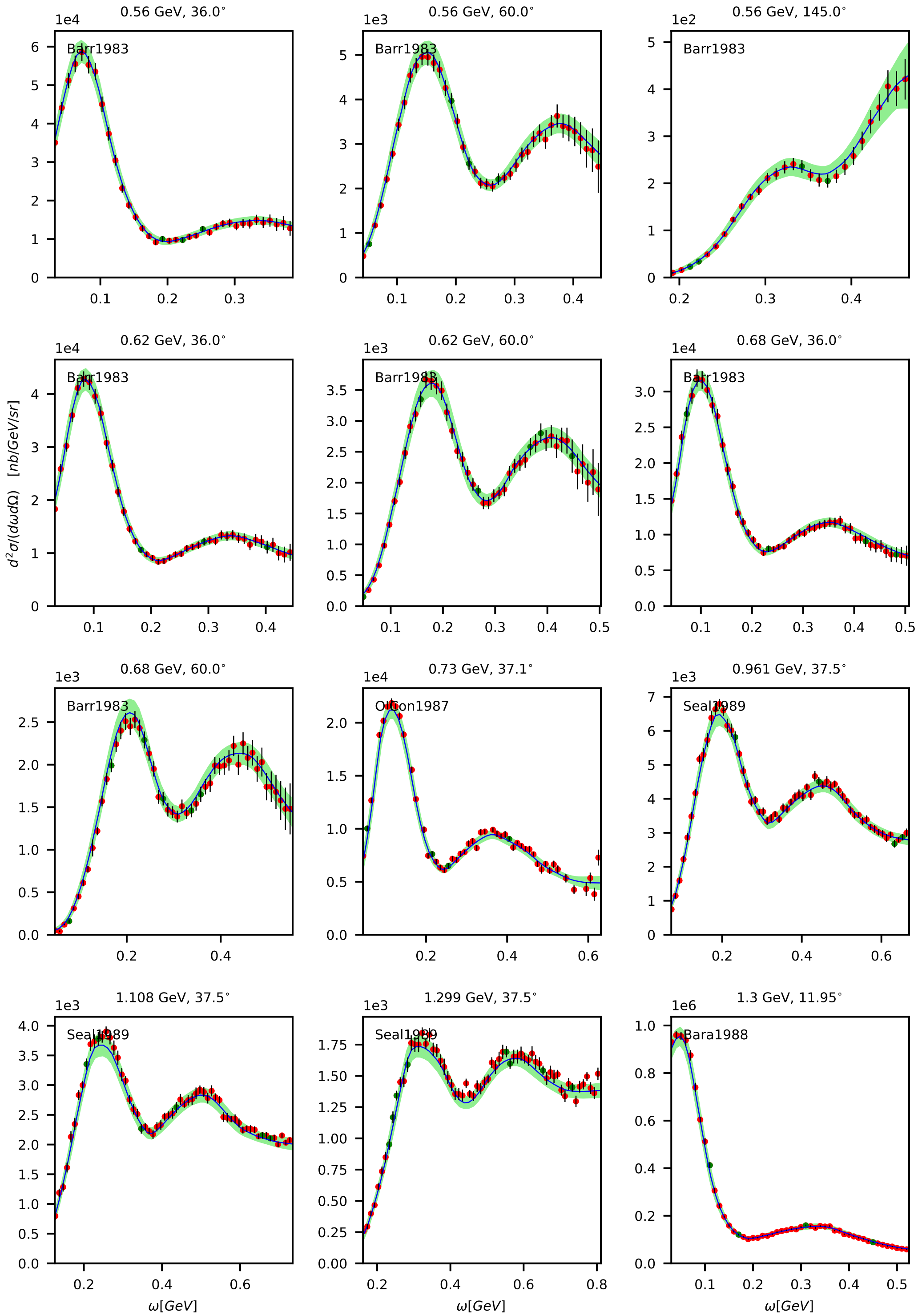

FIG. 4. Same as Fig. 1 - model A.

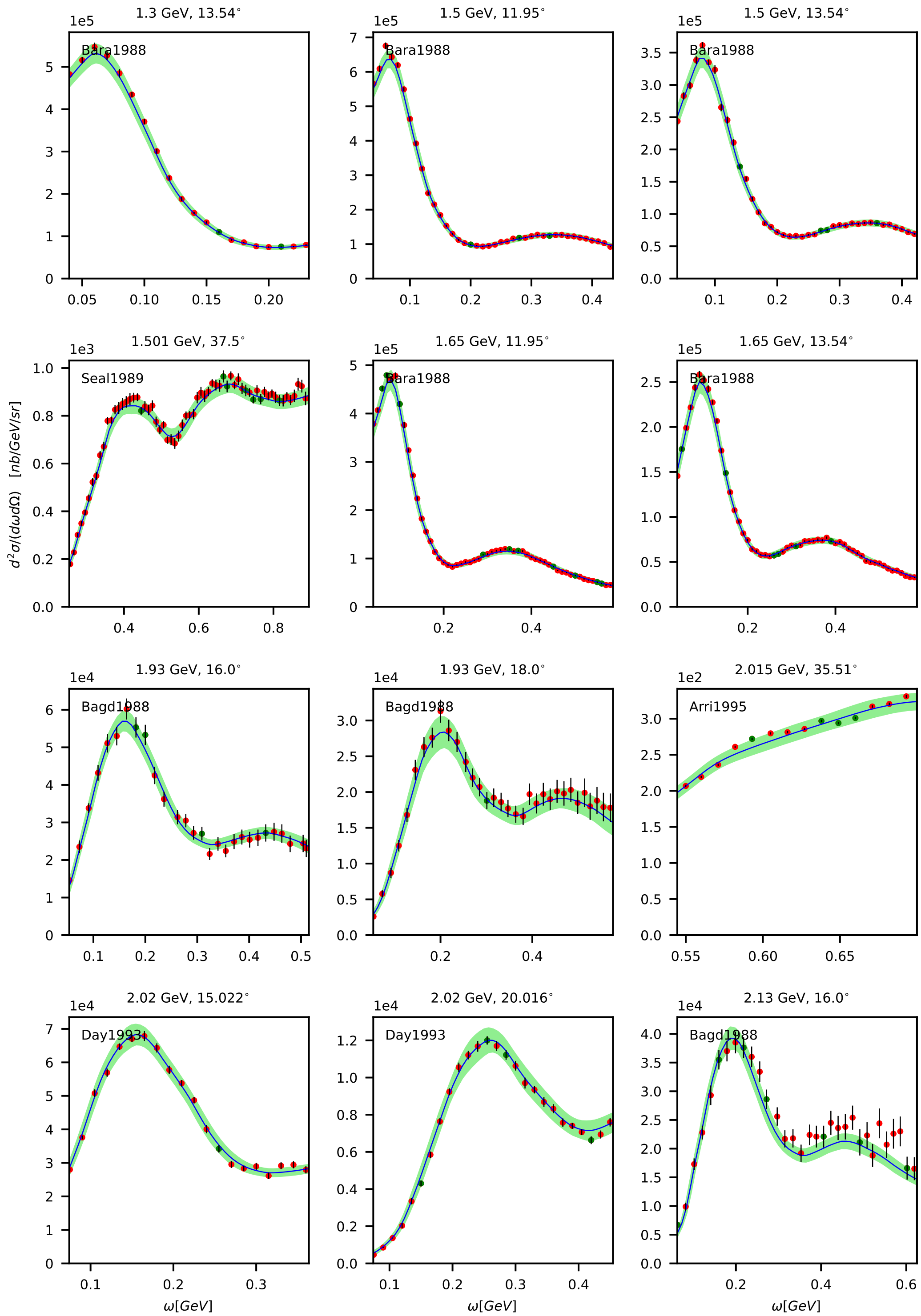

FIG. 5. Same as Fig. 1 - model A.

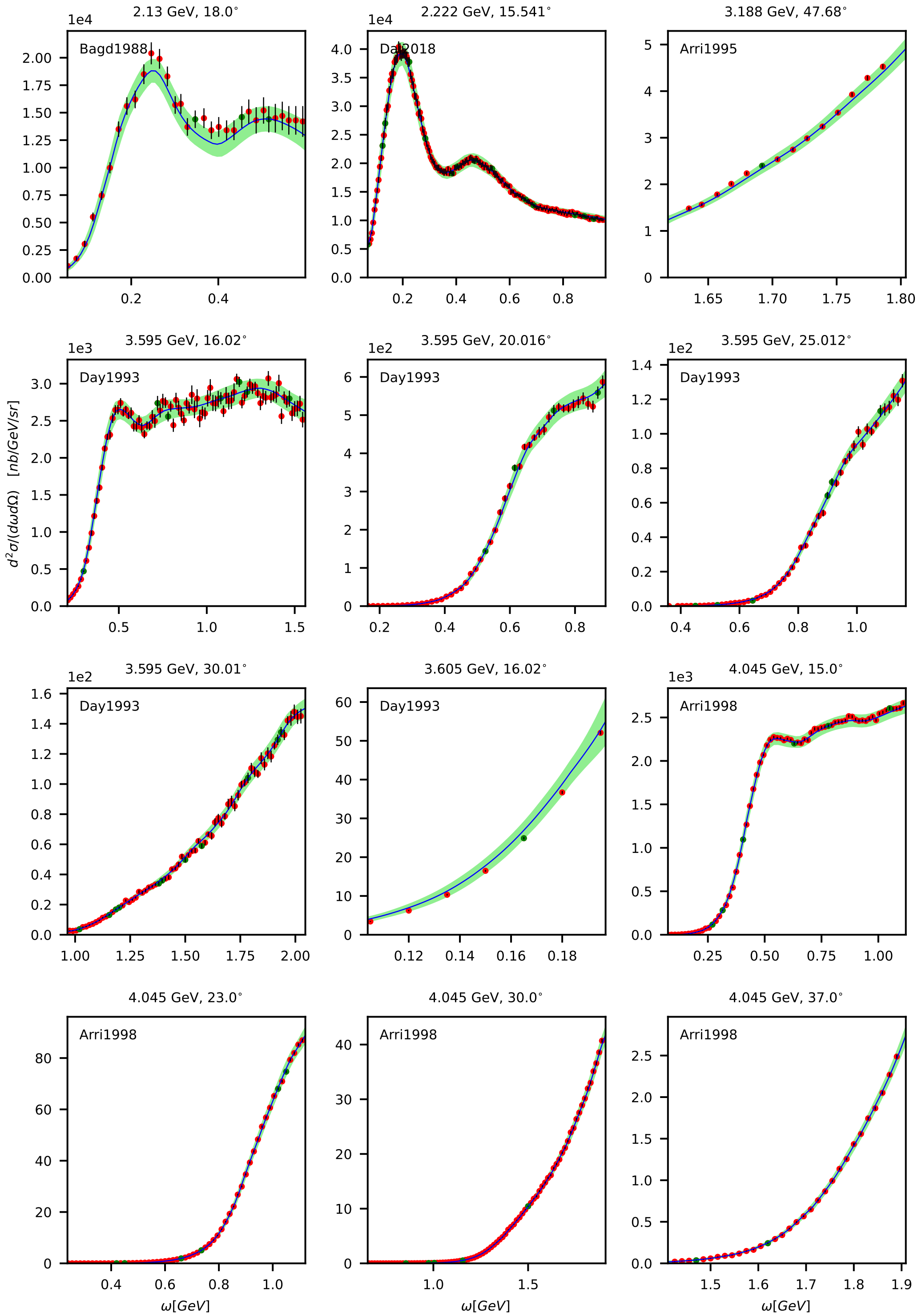

FIG. 6. Same as Fig. 1 - model A.

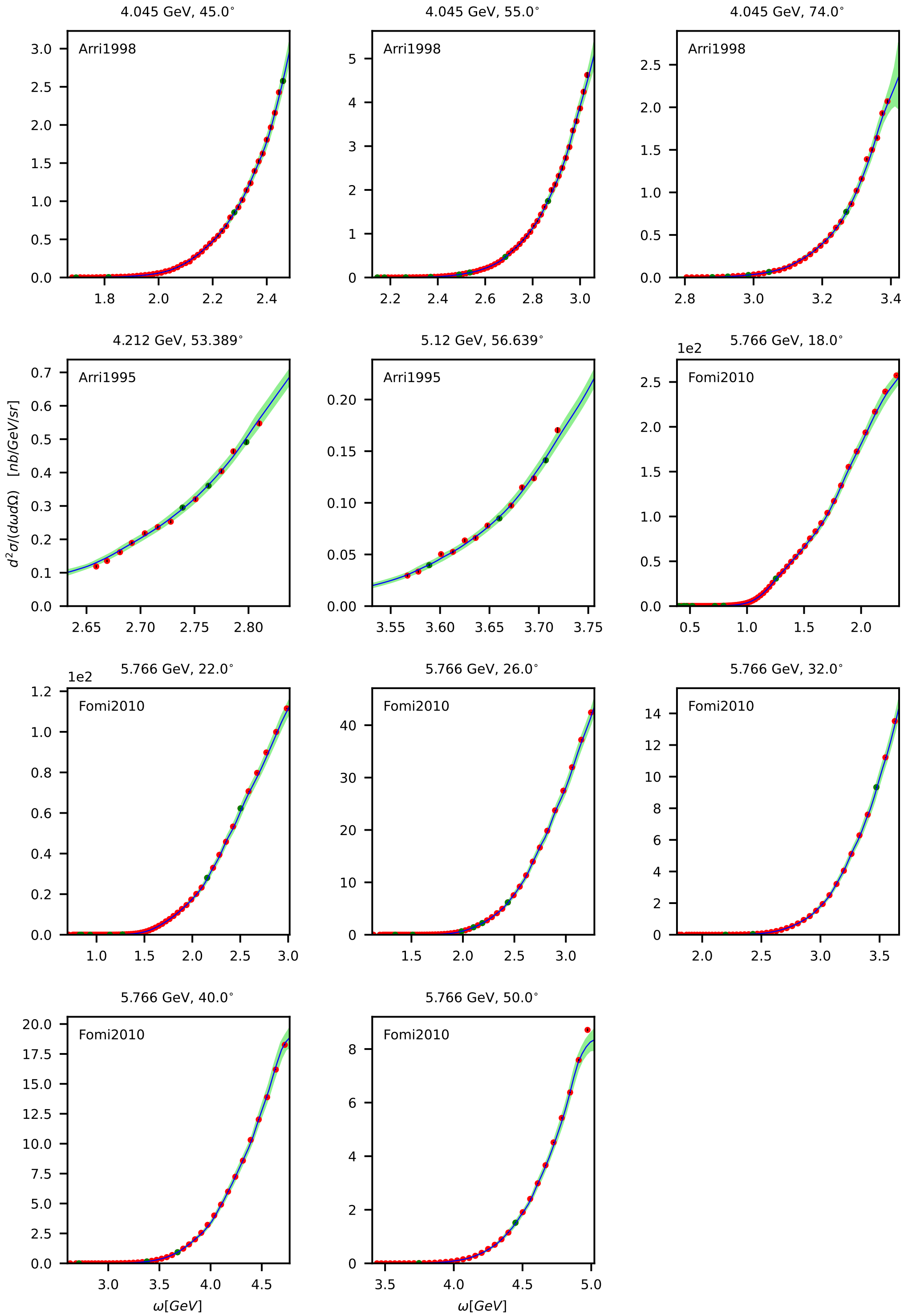

FIG. 7. Same as Fig. 1 - model A.

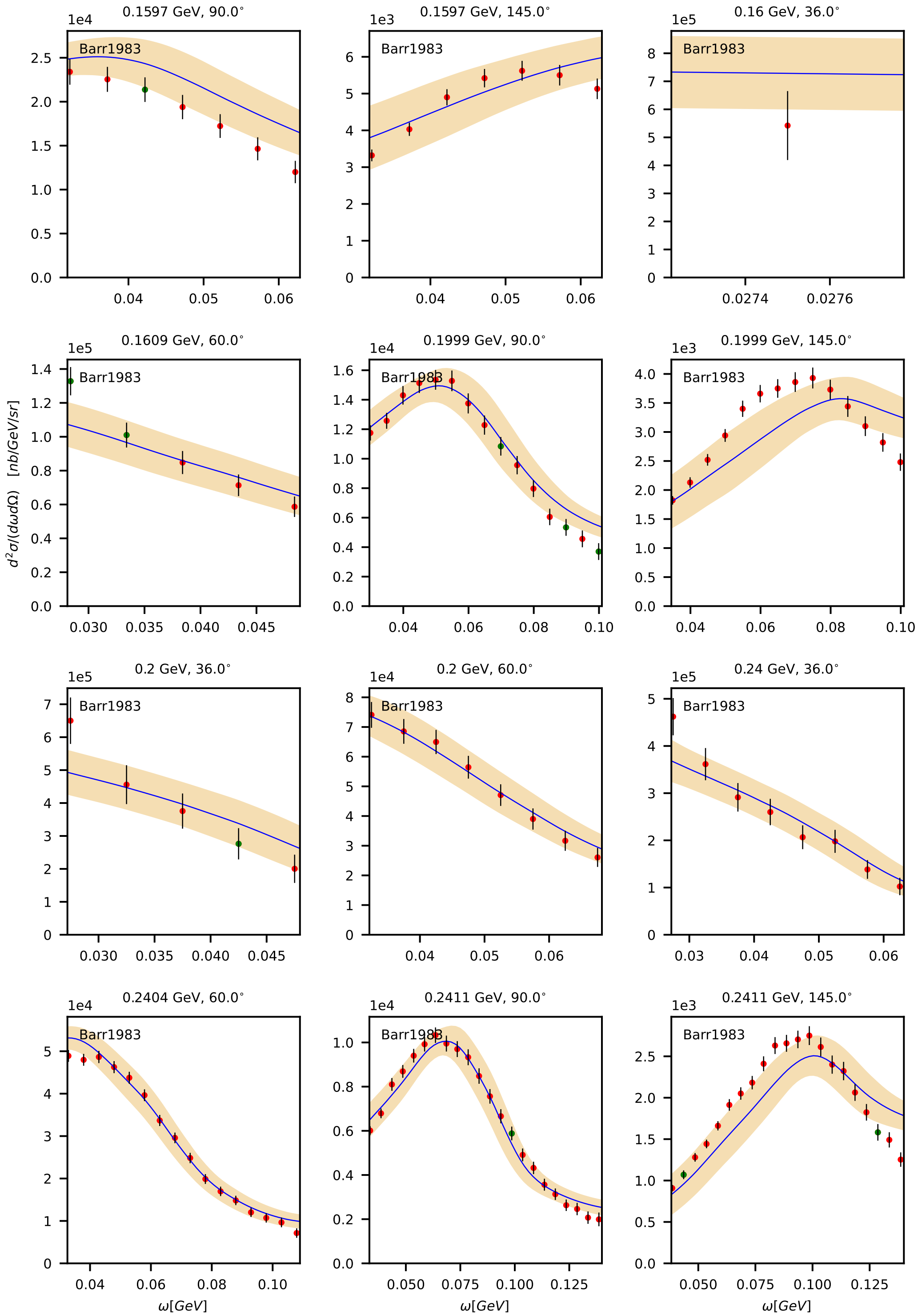

FIG. 8. Same as Fig. 1 but for model B.

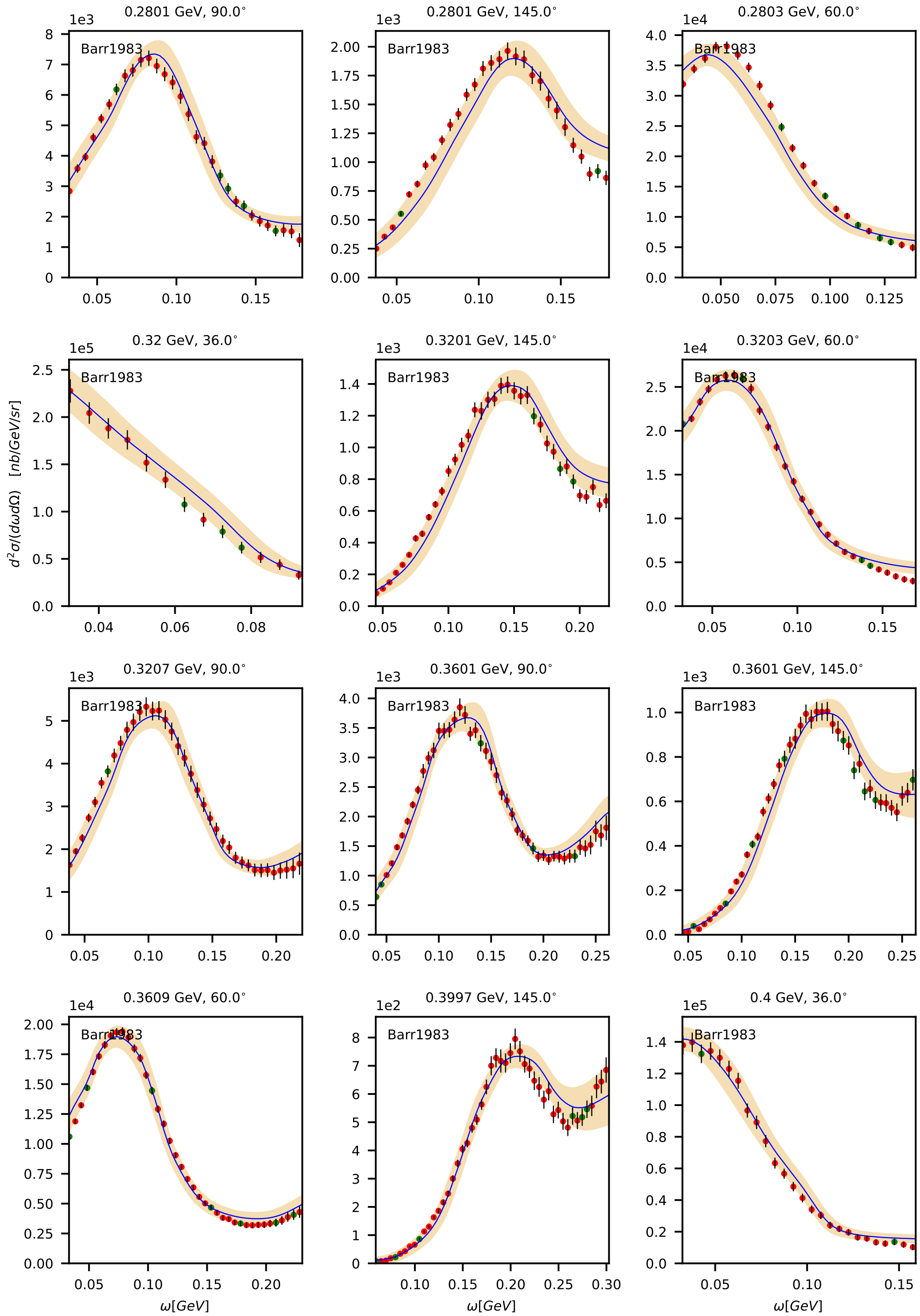

FIG. 9. Same as in Fig. 8 - analysis B.

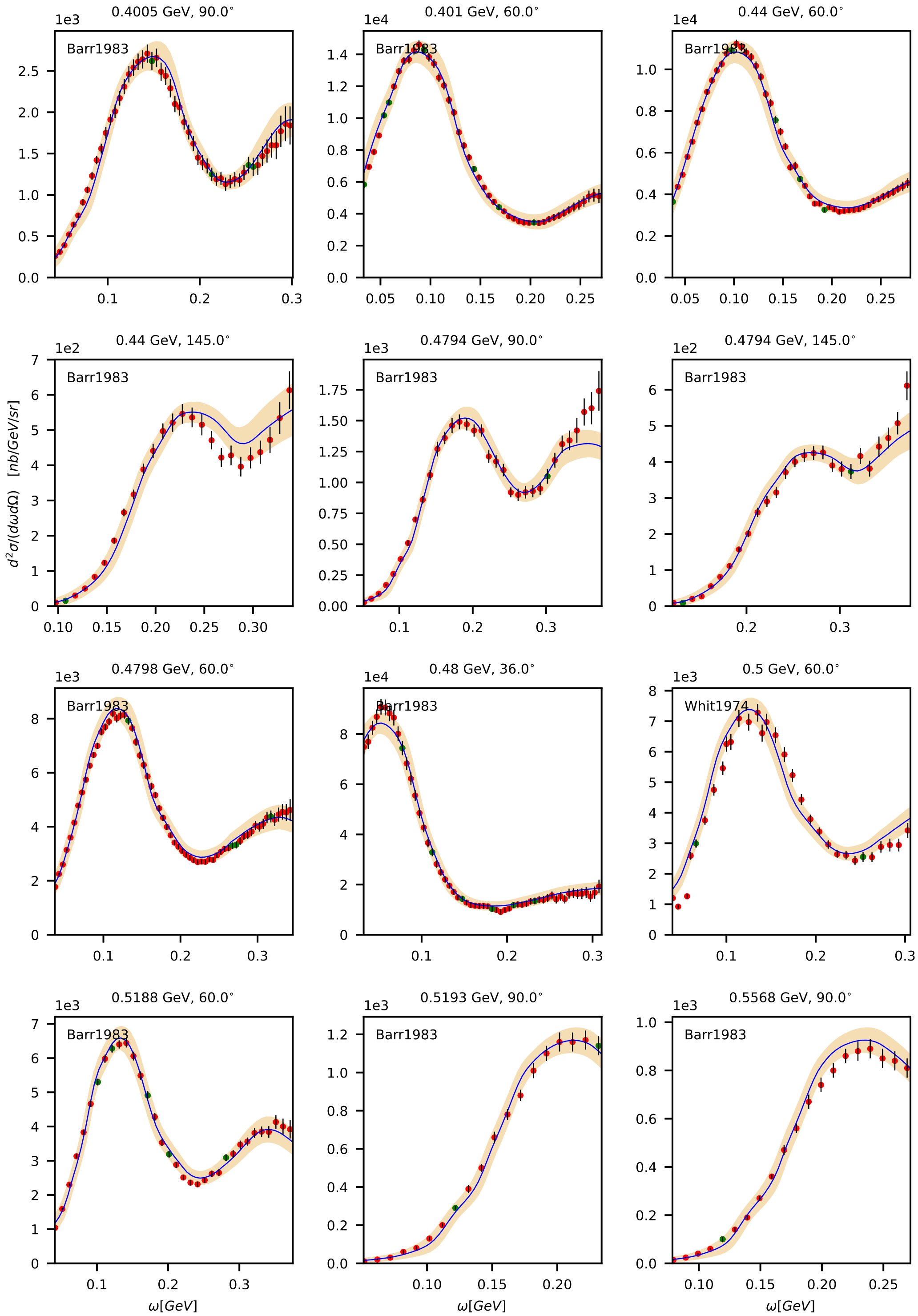

FIG. 10. Same as Fig. 8 - analysis B.

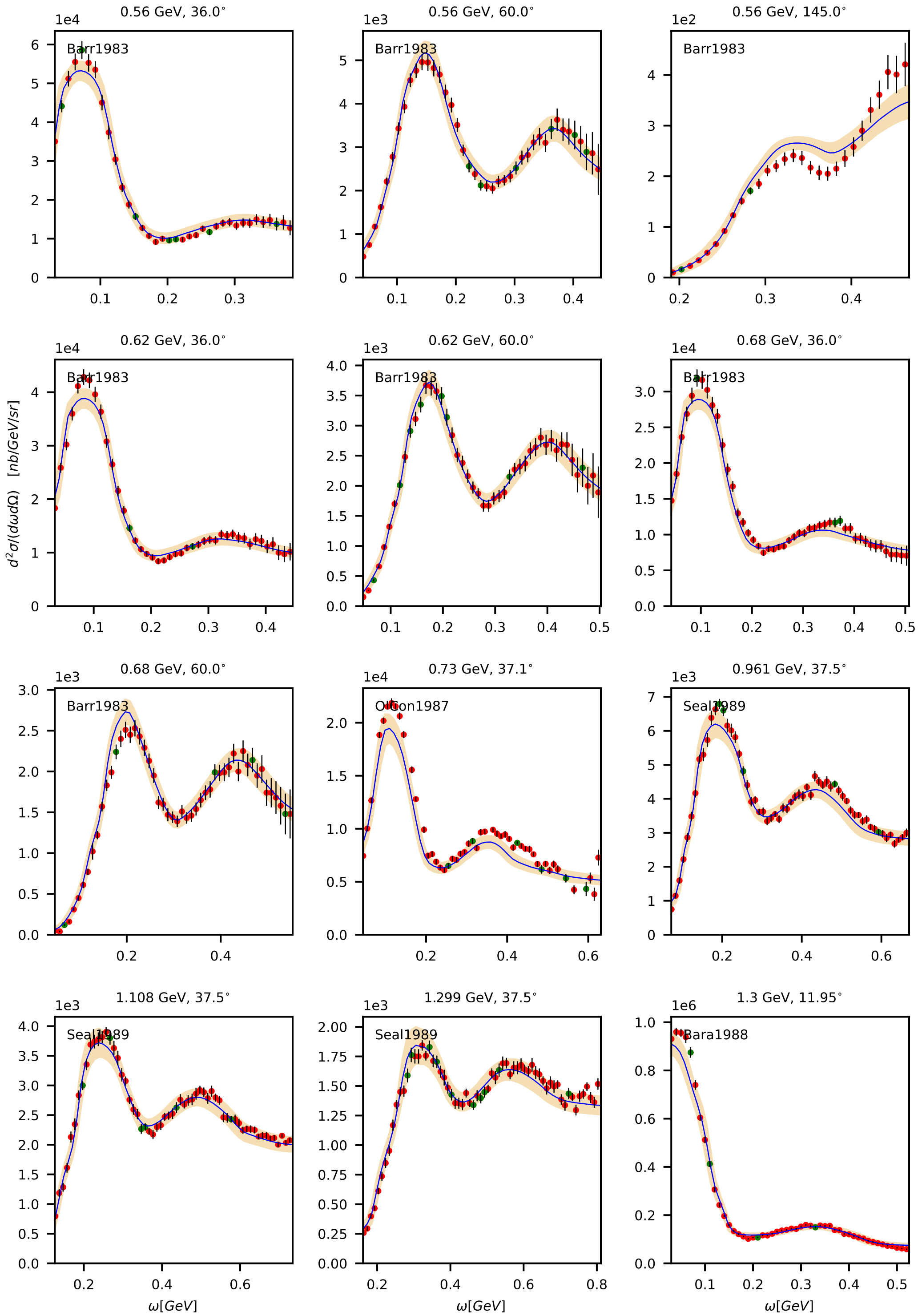

FIG. 11. Same as Fig. 8 - analysis B.

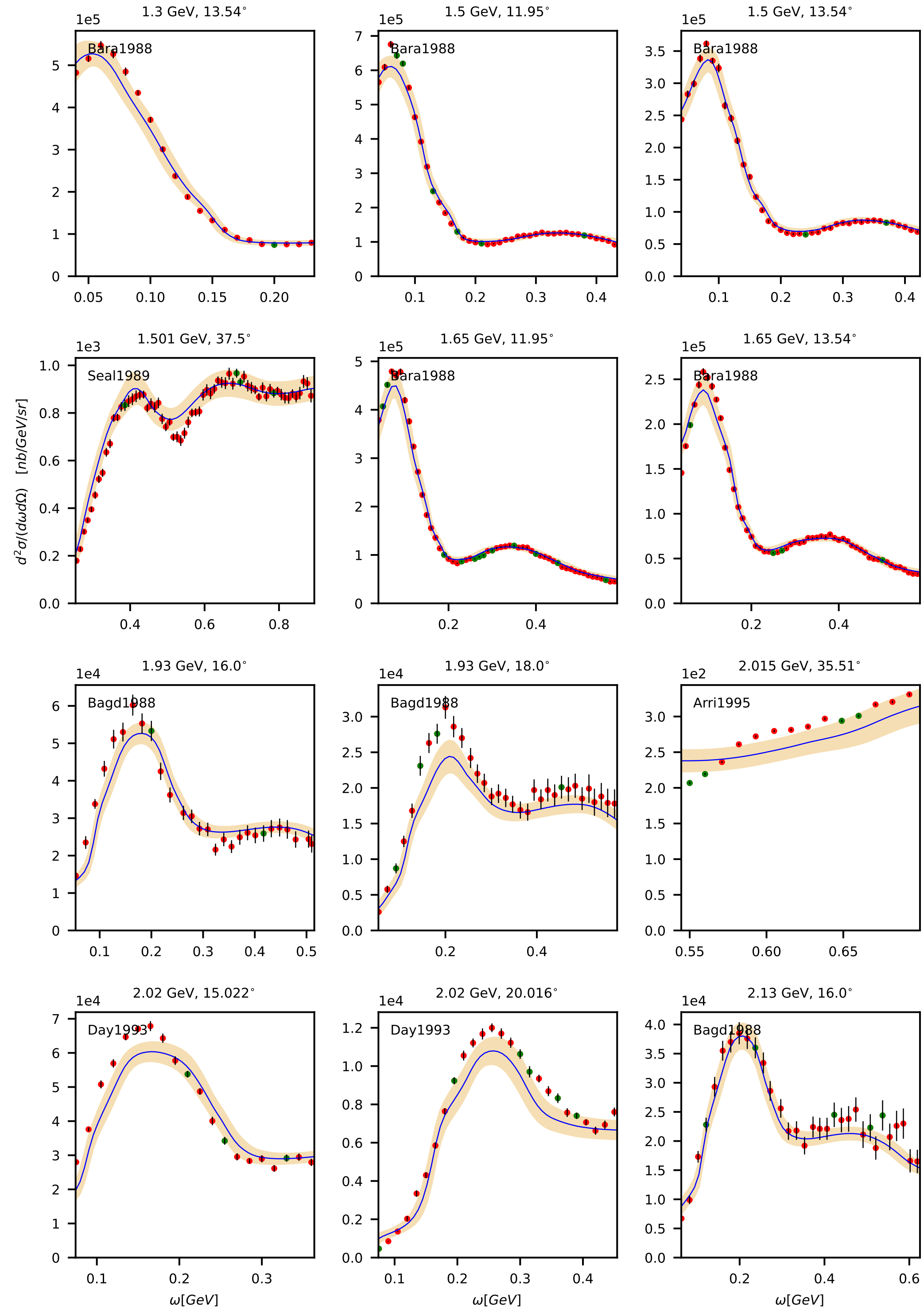

FIG. 12. Same as Fig. 8 - analysis B.

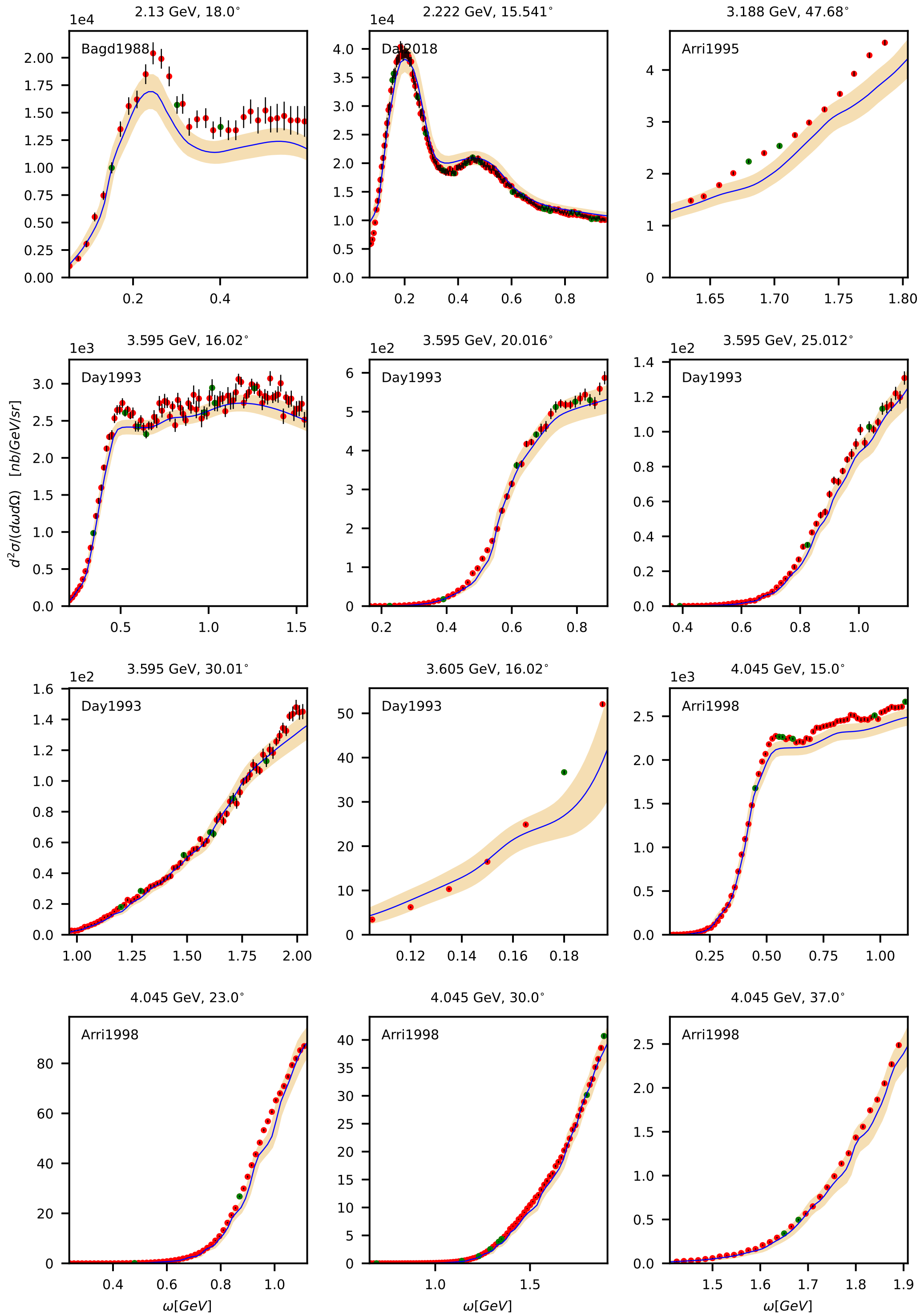

FIG. 13. Same as Fig. 8 - analysis B.

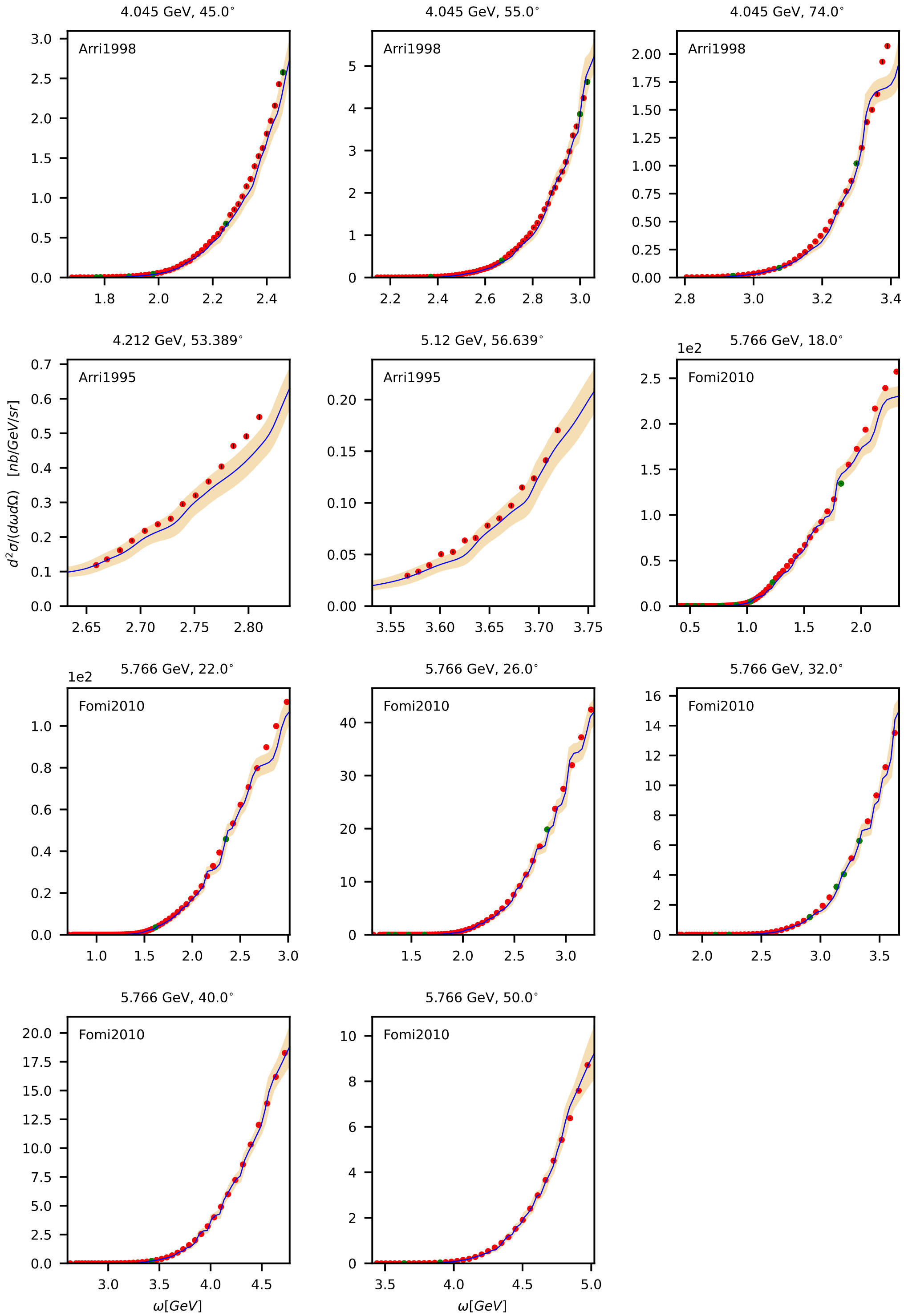

FIG. 14. Same as Fig. 8 - analysis B.