

Reply to “Is large weak mixing in heavy nuclei consistent with atomic experiments?”J. J. Szymanski,¹ J. D. Bowman,² M. Leuschner,¹ B. A. Brown,³ and I. C. Girit⁴¹*Department of Physics, Indiana University, Bloomington, Indiana 47405*²*Los Alamos National Laboratory, Los Alamos, New Mexico 87545*³*Department of Physics, Michigan State University, East Lansing, Michigan 48824*⁴*Department of Physics, Princeton University, Princeton, New Jersey 08540*

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We reply to the preceding comment.

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The authors of the paper “Is large weak mixing in heavy nuclei consistent with atomic experiments?” make a very interesting observation—the nuclear-spin dependent component of atomic parity nonconservation (PNC) experiments can be related to the results of nuclear PNC experiments. The authors point out that results from both nuclear and atomic PNC experiments are sensitive to the same weak mixing within the nucleus.

Both experiments have been performed in ²⁰⁷Pb. The authors conclude that the atomic PNC experiments place a limit of $\langle V_{\text{PNC}} \rangle < 14$ eV on the *d-f* mixing considered in ²⁰⁷Pb and, therefore, that mixings of greater than 100 eV are ex-

cluded. This limit is comparable to preliminary results on a nuclear ²⁰⁷Pb PNC experiment [1]. The limit also agrees with recent results of the TRIPLE Collaboration [2].

The prospect of measuring atomic and nuclear PNC effects for the same nucleus should be vigorously pursued. The extraction of the weak mixing-matrix element depends on different theoretical nuclear-structure calculations. These theories can be cross-checked between the two experiments. Such a check would be very useful in an attempt to reliably extract information on the isoscalar and isovector weak amplitudes in nuclei.

[1] Work done by an Indiana, Princeton, Los Alamos collaboration whose members are I. C. Girit, J. J. Szymanski, M. Leuschner, A. Andalkar, M. Petrov, and J. D. Bowman.

[2] Y. F. Yen *et al.*, in the SPIN '94 Proceedings (in press); J. D. Bowman *et al.*, in the Proceedings of the Fifth Conference on

the Intersections of Particle and Nuclear Physics, St. Petersburg, FL 1994 (in press); G. E. Mitchell, NSAC/DNP Town Meeting, Berkeley, CA 1995 (unpublished); all talks listed in this reference were given on behalf of the TRIPLE Collaboration.