

LA-UR-20-22575

Approved for public release; distribution is unlimited.

Title: Electron and neutrino scattering from nuclei

Author(s): Gandolfi, Stefano
Carlson, Joseph Allen
Lonardonì, Diego

Intended for: Report

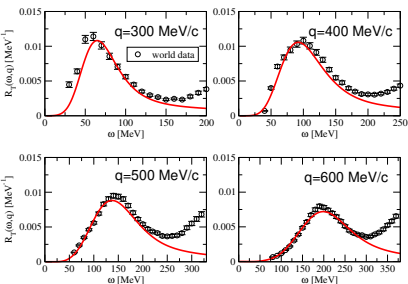
Issued: 2020-03-27

Disclaimer:

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Triad National Security, LLC for the National Nuclear Security Administration of U.S. Department of Energy under contract 89233218CNA000001. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

S. Gandolfi, J. Carlson, D. Lonardoni T-2: Electron and neutrino scattering from nuclei

The knowledge of how electrons and neutrinos interact in nuclei is fundamental for many reasons, and the proper inclusion of many-body correlations between nucleons is crucial. The calculation of the nuclei from two- and three-nucleon interactions obtained from first principle is, however, one of the most challenging problems for many-body nuclear physics.



- We have developed a new technique to calculate electroweak response functions in nuclei, the Short Time Approximation (STA).
- We have calculated the STA electromagnetic response functions of ^4He , finding excellent agreement with experimental data.

- S. Pastore, J. Carlson, S. Gandolfi, R. Schiavilla, R.B. Wiringa, "Quasielastic lepton scattering and back-to-back nucleons in the short-time approximation", arxiv:1909.6400, PRC in press (2020).

Work Supported by LDRD, and DOE ECA and SciDAC. Computer time made available by LANL Institutional Computing and by NERSC.

LA-UR-XX-YYYYY