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## Neutrino-nucleus reactions and e-capture rates based on new shell-model Hamiltonians

Neutrino-nucleus reaction cross sections relevant to supernova neutrino detection and nucleosynthesis are evaluated for <sup>12</sup>C, <sup>13</sup>C, <sup>16</sup>O, <sup>40</sup>Ar and <sup>56</sup>Ni with new shell-model Hamiltonians. Cross sections for various gamma and particle emission channels as well as for coherent scattering are obtained for <sup>12</sup>C, <sup>13</sup>C and <sup>16</sup>O. The updated cross sections are compared with available experimental data as well as previous calculations. Advantage of using light targets for coherent scattering is discussed.

Charged-current cross sections folded over neutrino spectra with and without the neutrino oscillations are compared to each other to see how they are sensitive to the MSW and/or collective neutrino oscillation effects. We also discuss electron-capture rates for supernova explosions and evolution of stars updated with new shell-model Hamiltonians for sd- and pf-shells. Evaluations of the rates for two-major shells such as sd-pf and pf-g shells are also in progress.

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