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Revealing the strength of three-nucleon interactions with the Einstein Telescope

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Three-nucleon forces are really important for understanding nuclear systems, including the dense matter found in neutron stars. In this study, we looked at different nuclear Hamiltonians that can accurately describe two-nucleon scattering data and properties of light nuclei, but differ in the three-nucleon interactions among neutrons. Although we didn't find any significantly improved constraints from current astrophysical data, we found that future observations of neutron star mergers with detectors like the proposed Einstein Telescope could provide really strong evidence to distinguish between these Hamiltonians.

Presenters: PANG, Peter (Nikhef); Dr PANG, Peter T. H.

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