International Conference on Exotic Atoms and Related Topics - EXA2017

Contribution ID: 5

## Antinucleon-nucleon interaction in chiral effective field theory

Friday, 15 September 2017 09:30 (30 minutes)

Results of a study of the antinucleon-nucleon interaction within chiral effective field theory are presented. This novel approach suggested by Weinberg has been applied rather successfully to the nucleon-nucleon interaction and can be adapted straightforwardly to the antinucleon-nucleon system. So far the antinucleon-nucleon potential has been derived up to next-to-next-to-leading order in the chiral expansion. The low-energy constants associated with the arising contact interactions are fixed by a fit to phase shifts and inelasticities provided by a recently published phase-shift analysis of antiproton-proton scattering data. The achieved description of the antinucleon-nucleon amplitudes is excellent and of a quality comparable to the one found in case of the nucleon-nucleon interaction at the same order.

As a special application of the antinucleon-nucleon potential predictions for the electromagnetic form factors of the proton in the time-like region are presented.

Primary author: HAIDENBAUER, Johann (Forschungszentrum Juelich GmbH, D-52425 Juelich, Germany)

Presenter: HAIDENBAUER, Johann (Forschungszentrum Juelich GmbH, D-52425 Juelich, Germany)

Track Classification: Hadron physics with antiprotons