



Contribution ID: 435

Type: **Oral Presentation**

## Resolving the NN controversy: a direct comparison of methods used for Luscher and the potential

*Friday, August 12, 2022 2:10 PM (20 minutes)*

An understanding of the nearly decades-long controversy between calculations of nucleon-nucleon interactions using the Luscher spectroscopy method and the HALQCD potential method has seen significant advancement in recent years due to the efforts of several groups. In particular, the use of improved operator methods has shed light on possible issues related to excited state contamination, while the first study of the lattice spacing dependence in a baryon-baryon system has shown large potential discretization systematics. In this talk, I will present a new study which compares the use of all methods in the literature for computing NN interactions on a single ensemble, in order to discriminate between excited state contamination and discretization effects, and discuss conclusions that this controversy has finally brought to light.

**Primary authors:** MEYER, Aaron (University of California, Berkeley); NICHOLSON, Amy (UNC Chapel Hill); WALKER-LOUD, Andre (Lawrence Berkeley National Laboratory); HANLON, Andrew (BNL); Dr KÖRBER, Christopher (Ruhr-Universität Bochum); MORNINGSTAR, Colin (Carnegie Mellon); Dr HOWARTH, Dean (LBNL); RINALDI, Enrico (University of Michigan); Dr RAPA, Eral (UC Berkeley); BERKOWITZ, Evan (Forschungszentrum Jülich); Dr MONGE-CAMACHO, Henry (ORNL); BULAVA, John (DESY Zeuthen); CLARK, Kate (NVIDIA); Dr MCELVAIN, Kenneth (LBNL); VRANAS, Pavlos (Lawrence Livermore National Lab); Ms SKINNER, Sarah (Carnegie Mellon)

**Presenter:** NICHOLSON, Amy (UNC Chapel Hill)

**Session Classification:** Hadron Spectroscopy and Interactions

**Track Classification:** Hadron Spectroscopy and Interactions