

Historical Perspective and Future Prospects for Nuclear Forces

R. Machleidt

Department of Physics, University of Idaho, Moscow, Idaho 83844, USA

The nuclear force is the heart of nuclear physics and, thus, the significance of this force for all of nuclear physics can hardly be overstated. Research on this crucial force has by now spanned eight decades and we are still not done. I will first review the rich history of hope and desperation, which had spin-off far beyond just nuclear physics. Next, I will present the current status in the field which is characterized by the use of chiral effective field theory (ChEFT) [1, 2]. Indeed, during the past two decades, ChEFT has evolved into a powerful tool to derive nuclear two- and many-body forces in a systematic and model-independent way. Nowadays, most *ab initio* calculations of nuclear structure and reactions are conducted with chiral forces. Therefore, after providing some background, I will also summarize the state of the art in the construction of high-quality chiral two-nucleon interactions [3, 4]. Finally, I will take a look at the future: Where will we stand 50 years from now? Will there ever be closure?

References

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