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Review

White paper on nuclear astrophysics and low-energy nuclear physics, Part 2: Low-energy nuclear physics

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ABSTRACT

Over the last decade, the Low-Energy Nuclear Physics (LENP) and Nuclear Astrophysics (NAP) communities have increasingly organized themselves in order to take a coherent approach to resolving the challenges they face. As a result, there is a high level of optimism in view of the unprecedented opportunities for substantial progress. In preparation of the 2015 US Nuclear Science Long Range Plan (LRP), the two American Physical Society Division of Nuclear Physics town meetings on LENP and NAP were held jointly on August 21–23, 2014, at Texas A&M, College Station, in Texas. These meetings were co-organized to take advantage of the strong synergy between the two fields. The present White Paper attempts to communicate the sense of great anticipation and enthusiasm that came out of these meetings. A unanimously endorsed set of joint resolutions condensed from the individual recommendations of the two town meetings were agreed upon. The present LENP White Paper discusses the above and summarizes in detail for each of the sub-fields within low-energy nuclear physics, the major accomplishments since the last LRP, the compelling near-term and long-term scientific opportunities plus the resources needed to achieve these goals, along with the scientific impact on, and interdisciplinary connections to, other fields.

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