

Abstract for an Invited Paper  
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**Towards a Deeper Understanding of the Nucleus with Exotic Nuclei<sup>1</sup>**

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Despite more than fifty years of study, many questions about now nuclei are put together remain. While nuclei near the valley of stability have provided a wealth of information, they are not sufficient to provide us with a comprehensive and unified description of the nucleus. Especially lacking is an accurate picture of those exotic species that are the basis of cosmic alchemy. The missing pieces in the puzzle can be filled in with a determined experimental and theoretical effort focusing on nuclei lying far from the valley of stability. Here, I will outline the intellectual challenges that can be addressed by proposed exotic-beam facilities, and how new experimental data will guide and refine theoretical descriptions of the nucleus.

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