



## Symmetry in Nuclear Physics: Model Calculations, Advances and Applications

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### Message from the Guest Editors

Dear Colleagues,

Symmetry concepts have and are continuing to play very important roles in revealing simple patterns emerging in quantum many-body systems and providing well-organized descriptions for achieving a deeper understanding of the underlying physics. Examples include Wigner’s  $SU(4)$  spin-isospin symmetry, the  $SU(3)$  symmetry revealed in nuclear shell model through the pioneering work of Elliott, and Racah’s  $SU(2)$  quasi-spin for pairing are classic examples of the use of symmetry concepts in nuclei. Various associated Lie algebraic symmetries and their extensions within nuclear shell-model calculations continue to play a major role in helping to understanding nuclear structure physics. For example, the recent advancements that incorporate multi-shell excitations based on the  $Sp(3,R) \supset SU(3)$  symmetry opens up a new and pathway for managing shell model calculations that include open-shell considerations...

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## Editor-in-Chief

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## Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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