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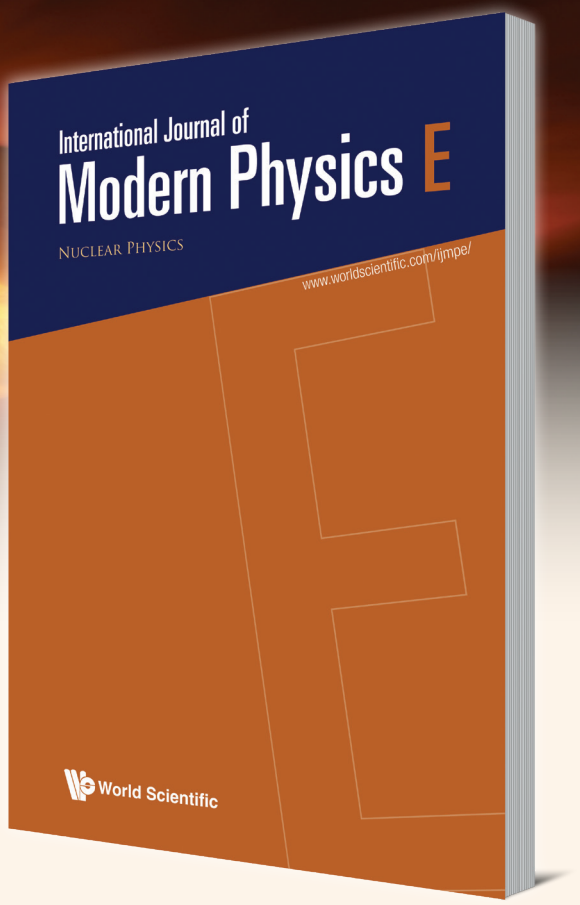

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Special Issue on Reflection Asymmetry in Atomic Nuclei
Guest Editor: **Pengwei Zhao** *(Peking University)*
Volume 32, Issue 10 (October 2023)
Contributors includes **R. V. Jolos, Shan-Gui Zhou, Dario Vretenar**, and many others.

Managing Editors

First observation of collective rotational bands in neutron-rich ^{142}La and the study of octupole/triaxial deformations in ^{142,143}La

Y. X. Luo, J. O. Rasmussen, J. H. Hamilton et al.

International Journal of Modern Physics E Vol. 30, No. 05, 2150037 (2021) DOI: 10.1142/S0218301321500373

This research paper discusses the first observation of collective rotational bands in neutron-rich 142La and the study of octupole/triaxial deformations in 142,143La. The results suggest triaxial and near zero octupole deformations in the yrast band of 142La, with alignment of proton pairs causing band-crossing. In contrast, alignment of neutron pairs and triaxial deformations play a larger role in the neighboring even-N 143La.

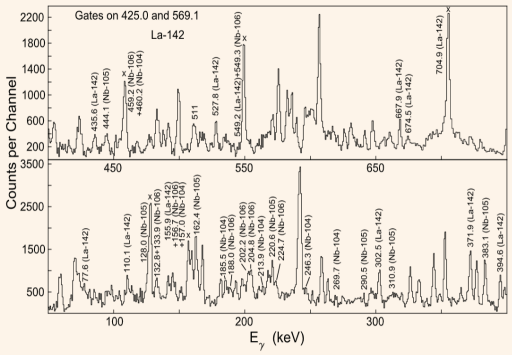

Fig. 1. An example of double-gated triple-coincidence spectra for the data analysis of ^{142}La. All

2023 update of the discoveries of nuclides

M. Thoennessen

International Journal of Modern Physics E
Vol. 33, No. 03n04, 2430001 (2024)
DOI: 10.1142/S0218301324300017

The difference between charge polarizations of fission fragments deduced by the static theoretical model and in the current data library

Shuichiro Ebata, Shin Okumura, Chikako Ishizuka, and Satoshi Chiba

International Journal of Modern Physics E
Vol. 32, No. 06, 2350030 (2023)
DOI: 10.1142/S0218301323500301

This paper discusses a theoretical method for determining the charge polarization and most probable charge of fission fragments. Results show a dip in charge polarization around spherical shell structures and a peak for deformed structures, but overall the values converge to zero. This differs from widely-used systematics and highlights the importance of using microscopic nuclear theory for accurate calculations.

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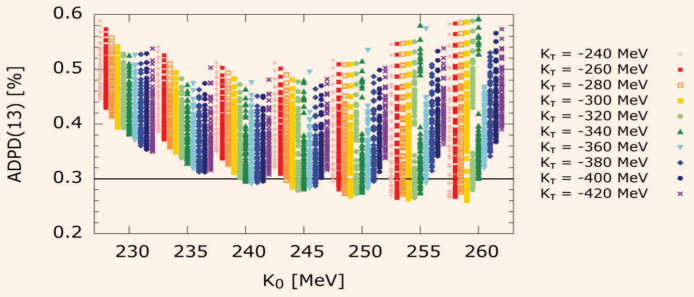
Constraints on the curvature of nuclear symmetry energy from recent astronomical data within the KIDS framework

Hana Gil, Panagiota Papakonstantinou and Chang Ho Hyun

International Journal of Modern Physics E Vol. 31, No. 01, 2250013 (2022) DOI: 10.1142/S0218301322500136

In this paper, we investigate the density dependence of the nuclear symmetry energy S(ρ) in the KIDS (Korea-IBS-Daegu-SKKU) framework for the nuclear equation of state (EoS) and energy-density functional (EDF). The aim is to constrain the value of the curvature parameter (K_{sym}) based on recent astronomical data.

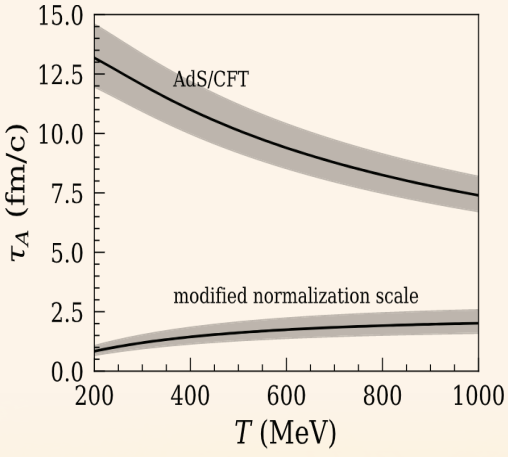


Sphaleron transition rates and the chiral magnetic effect

Joseph I. Kapusta, Ermal Rrapaj and Serge Rudaz

International Journal of Modern Physics E
Vol. 31, No. 01, 2250010 (2022)
DOI: 10.1142/S0218301322500100

The chiral magnetic effect is a novel quantum phenomenon proposed for high-energy nuclear collisions but which has yet to be observed. We quantify the axial charge relaxation time, due to sphalerons, which enters in simulations of this effect. An extrapolation of weak coupling calculations of the sphaleron rate yields rather different relaxation times than strong coupling AdS/CFT calculations. The AdS/CFT relaxation time is the larger one of the two by an order of magnitude, but the weak coupling relaxation time may not be reliable because it is only marginally bigger than the microscopic thermalization time. The role of quark masses has yet to be accurately assessed.



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