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Type: 3rd week (Nishinomiya-Yukawa symposium)

Chiral symmetry in nuclear medium observed in spectroscopy of pionic atoms

Monday, October 28, 2024 2:00 PM (1 hour)

We discuss quantitative evaluation of chiral condensate in nuclear medium based on high-precision experimental information of pionic atoms. We made spectroscopy of deeply bound pionic Sn 121 atoms and determined the binding energies and the widths of the pionic orbitals. We deduced pion-nucleus interaction to evaluate the chiral condensate at nuclear saturation density, which was found to be reduced by a factor of $60\pm 3\%$ (T. Nishi, K. Itahashi et al., Nature Phys. (2023) doi:10.1038/s41567-023-02001-x) compared with that in the vacuum. We also briefly discuss our activities of the spectroscopy of eta'-mesic nuclei to study axial U(1) anomaly.

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Session Classification: Nishinomiya-Yukawa workshop