Solitons Bound to Heavy Mesons ◇

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We improve the bound state approach of the Skyrme model applied to the heavy baryons adopting a static heavy meson picture where the soliton moves around the fixed heavy meson. This allows to take into account the center of mass corrections in a more consistent way. The bound state masses so obtained are comparable to the experimentally observed Λ_C and Λ_C^* masses. A loosely bound state of a soliton with an antiflavoured heavy meson is found, which leaves a possibility of the nonstrange pentaquark baryon(s).

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S-wave Interactions of $\bar{K}$ and η Mesons in Nuclear Matter ◇

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We give an updated discussion of the in-medium properties of K^- in nuclear matter, including implications for $K^\pm$ subthreshold production in heavy-ion collisions. The second part of this paper focuses on s-wave interactions of η mesons in matter and the η effective mass. We point out striking differences in the in-medium behaviour of the $\Lambda(1405)$ and $S_11(1535)$ resonances. While the $\Lambda(1405)$ dissolves in nuclear matter, the $S_11(1535)$ is predicted to survive, a feature that is consistent with recent data on η photoproduction from nuclei.

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Deeply Bound Pionic States and the Effective Pion Mass in Nuclear Systems ◇

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We show that the s-wave pion-nuclear potential which reproduces the deeply bound pionic states in Pb, recently discovered at GSI, is remarkably close to the one constructed directly from low energy theorems based on chiral symmetry. Converting this information into an effective pion mass we find $m_\pi^*/m_\pi \cong 1.13$ in the center of the Pb nucleus, and $m_\pi^*/m_\pi \cong 1.07$ in symmetric nuclear matter.

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