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Calculations of antiproton-nucleus quasi-bound states based on the Paris $\bar{N}N$ potential.

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This contribution deals with our recent study of antiproton-nucleus quasi bound states [1] using the latest version of the Paris $\bar{N}N$ potential [2]. We construct the pbar-nucleus optical potential based on the related S- and P-wave scattering amplitudes. The free amplitudes are modified by multiple scattering approach in order to account for Pauli correlations in the medium [3]. We discuss the energy dependence of the optical potential and evaluate the corresponding $\bar{p}$ binding energies and widths in selected nuclei by solving the Dirac equation. The S-wave Paris potential yields similar spectra of $\bar{p}$ bound states as the phenomenological potential accounting for
$\bar{p}$ atom data [4], but larger $\bar{p}$ widths. Next, we discuss the effect of the P-wave interaction and the implications for the antiproton-nucleus quasi-bound states.

References:

[1] J. Hrtankova, J. Mares, Proceedings of 12th International Conference on Low Energy Antiproton Physics (LEAP 2016), JPS Conference Proceedings, in print.

[2] B. El-Bennich, M. Lacombe, B. Loiseau and S. Wycech, Phys. Rev. C 79 (2009) 054001.

[3] T. Wass, M. Rho and W. Weise, Nucl. Phys. A 617 (1997) 449.

[4] J. Hrtankova, J. Mares, Nucl. Phys. A 945 (2016) 197.

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