$\bar{K}N$ interactions in the nuclear medium and $\bar{K}$-nuclear quasi-bound states

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This review summarizes our present understanding of in-medium $\bar{K}N$ interactions and related recent studies of $\bar{K}$-nuclear bound states.

We focus on the role played by medium-modifications and subthreshold energy dependence of the $\bar{K}N$ scattering amplitudes derived from a chirally motivated model. The in-medium $\bar{K}N$ scattering amplitudes are employed in self-consistent calculations of $\bar{K}$-nuclear quasi-bound states across the periodic table. Two-nucleon $K^-NN \to YN$ absorption modes estimated from fitting to kaonic atoms are considered. Dynamical polarization effects as well as the p-wave interactions generated by the $\Sigma(1385)$ subthreshold resonance are discussed. Sizable widths, comparable or even larger than the corresponding binding energies of the $\bar{K}$-nuclear quasi-bound states are anticipated.