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Abstract for an Invited Paper for the APR09 Meeting of the American Physical Society

Shell-model interactions around $^{100}\mathrm{Sn}$

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I will try to give an overview of different many-body approaches to nuclear structure problems around the doubly magic nucleus ¹⁰⁰Sn. The many-body methods addressed are many-body perturbation theory combined with the nuclear shell-model, although new directions within various coupled-cluster theories will also be discussed. The emphasis rests however within an analysis that aims at uncovering the important physics, from the basic nuclear interactions entering the different many-body approaches to specific correlations and properties of selected nuclei. A critical look at the different methods with respect to their limits, strengths, applicability and reliability of the theoretical results will also be discussed.