35,37,39S isotopes in sd–pf space: Shell-model interpretation

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Abstract

The structure of 35,37,39S isotopes is described by performing comprehensive shell model calculations with SDPF-U and SDPFMW interactions. Protons and neutrons are restricted to the sd-shell for \( N < 20 \), neutrons start to fill the pf-shell for \( N > 20 \). Natural parity states are described by only in-shell mixing, unnatural parity states with 1p–1h inter-shell neutron excitations. With SDPF-U interaction, reported are the results for natural parity states only because this interaction is not suitable for cross shell excitations. Calculated energy levels, electromagnetic properties and spectroscopic factors are in good agreement with the recently available experimental data.

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