

**Generation of the Basis States for the
Calculation of the Effects of Core
Excitations on the Low-lying Negative
Parity States of ⁹⁰Zr.**

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Abstract:

From the various theoretical studies reported on the low-lying levels in ^{90}Zr , it has been established that the spectrum is rather anomalous in that it has attributes of a simple two-proton coupling and some collectivity, notably with the 2_1^+ , 2_2^+ and 3_1^- low-lying states.

The basis states necessary for the inclusion of core excitations in the low-lying negative parity states ($J < 7^-$) in ^{90}Zr are generated in this work. It is hoped that the eventual inclusion of core excited states in manner specified by Lawson in the study of the low-lying positive parity states for ^{18}O would lead to reproducing the experimental energy levels for these low-lying states better than was obtained with the previous models.

Keywords: Parity states/ ^{90}Zr / core excitations

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