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Dipole Bands in 196Hg

In previous studies dipole bands were observed in a number of even Hg isotopes, including 196Hg where one dipole band was found [1]. In an experiment at iThemba LABS we observed both this and a second dipole band in 196Hg and could make an unambiguous spin and parity assignments from DCO and polarization measurements.
The experiment was performed using the AFRODITE array that consisted of 7 suppressed clover detectors. 196Hg was populated in the 194Pt (α,6n) reaction at 65 MeV using a thin (0.2 mg/cm2) target. The decay scheme obtained from a study of gamma-gamma coincidences generally confirms and extends the level scheme reported by Mehta et al. [2]. We extended the even spin negative parity structure beyond the band crossing and up to spin 24-. We also observed the dipole band reported by Cederwall et al [1], and managed to establish two decay paths out of this band, to the even- and odd-spin negative parity bands, thereby fixing the excitation energy, spin and parity (-) of this dipole band. A second dipole band that extends both above and below previously observed levels at 5351, 5617 and 5860 keV [2] was observed. DCO and polarization measurements on the transitions that depopulate this band towards a negative parity band fix the spin and parity (+). In addition, a second odd-spin negative parity band is extended beyond a band crossing up to a spin 19- level at 4877 keV, and three new positive parity bands are also observed.
A discussion on possible configurations as well as a comparison with bands in neighboring Hg isotopes will be presented.

[1] B. Cederwall et al., Phys. Rev. C 7(1993) R2443
[2] D. Mehta et al., Z. Phys. A 339(1991) 317

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