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Gamma-ray spectroscopy of ³⁶Cl nucleus.

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In the present work, structure of the 36Cl nucleus has been studied using Compton-suppressed GASP array. Medium-spin states in the 36Cl nucleus have been populated in the 24Mg(14N,2p) fusion-evaporation reaction at Elab = 31 MeV. Fifteen new excited levels decaying through more than 40 gamma transitions have been assigned to this nucleus. The branching ratios and angular distributions have been measured to assign spin and parity of newly identified levels. The level scheme of 36Cl has been extended up to the 9+ state at 7476 keV excitation energy, and up to the 11– state at 10296 keV excitation energy. Experimental results are interpreted in context of the Shell Model calculations using two different configuration spaces for positive and negative parity states. Present results are found to be in good agreement with the shell model predictions for both excitation energies and decay patterns.

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