

# THE HURWITZ THEOREM FOR BESSEL FUNCTIONS AND ITS CONSEQUENCES FOR ANTIBOUND STATES

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The Hurwitz theorem states (inter alia) that the Bessel function  $J_{-v}(ix)$  has no zeros for real  $x$  and  $2N < v < 2N + 1$  ( $N = 0, 1, \dots$ ). We derive a number of consequences for the Dirichlet and Neumann antibound states concerning the Bessel and hypergeometric equations, in which the potential has only exponential decay  $\sim \exp(-2x)$  at infinity. Little is known about the distribution of resonances and antibound states for this decay, and a number of conjectures are suggested, supported by computational considerations.