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Excited isovector mesons using the stochastic LapH method

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The spectrum of excited isovector mesons is studied using a $32^3 \times 256$ anisotropic lattice with u,d quark masses set to give a pion mass near 240 MeV. Results in the bosonic isovector nonstrange symmetry channels of zero total momentum are presented using correlation matrices of unprecedented size. In addition to spatially-extended single meson operators, large numbers of two-meson operators are used, involving a wide variety of light isovector, isoscalar, and strange meson operators of varying relative momenta. All needed Wick contractions are efficiently evaluated using a stochastic method of treating the low-lying modes of quark propagation that exploits Laplacian Heaviside quark-field smearing. Level identification is discussed.

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