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Beyond Generalized Eigenvalues

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Two analysis techniques, the *generalized eigenvalue method* (GEM) or *Prony's method* (PM), are commonly used to analyze statistical estimates of correlation functions produced in lattice quantum field theory calculations. GEM takes full advantage of the matrix structure of correlation functions but only considers individual pairs of time separations when much more data exists. PM can be applied to many time separations and many individual matrix elements simultaneously but does not fully exploit the matrix structure of the correlation function. We combine both these methods into a single framework based on *matrix polynomials* which we call *block Prony method* (BPM).

Topical area

Algorithms and Artificial Intelligence

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