

The Spectral Cauchy-Akaike Method

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Abstract

We introduce a variation of Cauchy method to minimize a convex quadratic function. It explores the fact, proved by Akaike, that the steepest descent method will be trapped in a two dimensional subspace associated to extreme eigenvalues. The algorithm then estimates the largest eigenvalue and performs a spectral step to scape this subspace. We will compare the new algorithm to the Barzilai-Borwein and Cauchy-Barzilai-Bowein methods and discuss its extensions to box constrained problems.