An upper bound on complexity of optimization for Gaussian random fields

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The global optimization problem is to approximate the minimum of a multimodal function. In one formulation, an algorithm adaptively selects points at which to evaluate the function with the goal of approximating the minimum to within a prescribed error tolerance using the least number of function evaluations. For certain classes of Gaussian random fields, the average number of function evaluations required can be bounded by the product of two terms: one that increases exponentially with the dimension of the domain, and another that increases logarithmically in the reciprocal of the error tolerance.