CALCULATION OF THE PARAMETERS OF MICROSCOPIC OPTICAL POTENTIAL BY ASYNCHRONOUS DIFFERENTIAL EVOLUTION ALGORITHM

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Differential Evolution (DE) [1] is an evolutionary algorithm to solve derivative-free optimization problems of finding a global minimum, $\vec{x}^* = \{x_j\}\big|_{j=0,\ldots,D-1}$, of a function $f(\vec{x})$: $\Omega \subset \mathbb{R}^D \to \mathbb{R}$: $f(\vec{x}^*) \leq f(\vec{x})\ \forall \vec{x} \in \Omega$. Classical Differential Evolution (CDE) [2] employs a synchronous generation-based evolution strategy.

A novel Asynchronous Differential Evolution (ADE) [3] incorporates mutation, crossover and selection operations into an asynchronous strategy. It is well suited for parallel optimization.

Constraints on control parameters for *best/1/bin* strategy of CDE and for four new strategies of a novel Asynchronous Differential Evolution (ADE) are founded in [4].

In oure work the spesification of parameters of microscopic optical potential for elastic $\pi^+ N$ scattering in the high-energy approximation [5] using elastic scattering data is done by the new ADE algorithm.

References.

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