Cooperative Evolution - a New Algorithm for Refining Disordered Structures

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The combination of evolutionary algorithms and Monte Carlo simulation is a powerful tool for the investigation of disordered crystals [1]. In analogy to natural evolution, Monte Carlo parameters are optimized by selection, mutation and recombination of previous, suboptimal solutions ("individuals"). In contrast to the technique used in [1] the method proposed in this contribution is not based on competition, but takes advantage of cooperation between individuals. Each of the individuals is allowed to live as long as it is capable of improving the structure. It is shown that this technique leads to a better performance than the algorithm described in [1]. The principle of Cooperative Evolution and its application to disordered structures will be presented.

[1] Weber T., Bürgi H. B., *Acta Cryst.,* 2002, A**58,** 526.

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