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## **"Collective Monte Carlo updating for off-lattice systems"**

The introduction of Cluster Monte Carlo algorithms led to much larger computational efficiency compared to (conventional) local Monte Carlo schemes. For example, by using cluster algorithms it was possible to reduce critical slowing down or even to avoid this problem.

Unfortunately, up to now most such cluster algorithms have been designed for classical and quantum mechanical models that are defined on a lattice. In fact, currently there is only one known cluster algorithm for off-lattice models which is based on the exchange of clusters generated by overlaying a rotated particle configuration with the original (non-rotated) configuration [1,2]. Although this algorithm has been successfully applied to a number of models (phase separation in fluid mixtures, stabilisation of colloidal suspensions by nanoparticles, polydisperse systems), it works rather inefficiently for higher densities. Here we present an alternative approach, which iterates a translational move in order to generate particle clusters. The main advantage of this approach is that the distribution of cluster sizes can be tuned by varying the step width of the elementary move.

[1] C. Dress and W. Krauth, J. Phys. A 28, 597 (1995).

[2] J. Lui and E. Luijten, PRL 92, 035504 (2004).

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**Alle Interessenten sind herzlich eingeladen.**

Die Sprecher des Graduiertenkollegs  
Manfred Lücke und Ludger Santen

**Strukturbildung und Transport  
in komplexen Systemen**