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### Multi-scale simulations with complex automata: in-stent restenosis and suspension flow

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**Publication date**  
2010

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#### **Citation for published version (APA):**

Lorenz, E. (2010). *Multi-scale simulations with complex automata: in-stent restenosis and suspension flow*.

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# Publications

published:

- E. Lorenz, A. Caiazzo, and A. G. Hoekstra, *Lees-Edwards boundary conditions for lattice Boltzmann suspension simulations*, Physical Review E 79 (3), 036706, 2009.
- E. Lorenz, A. Caiazzo, and A. G. Hoekstra, *Corrected momentum exchange method for lattice Boltzmann simulations of suspension flow*, Physical Review E 79 (3), 036705, 2009.
- A. G. Hoekstra, A. Caiazzo, E. Lorenz, J.-L. Falcone, and B. Chopard, *Complex Automata: Multi-scale Modeling with Coupled Cellular Automata*, in A. G. Hoekstra, J. Krok, P. M. A. Sloot (Eds): Modeling of Complex Systems using Cellular Automata, Springer, 2010.
- A. G. Hoekstra, E. Lorenz, J.-L. Falcone, and B. Chopard, *Towards a Complex Automata Framework for Multi-Scale Modeling: Formalism and the Scale Separation Map*, in Y. Shi et al. (Eds.): ICCS 2007, Part I, Lecture Notes in Computer Science 4487 (Springer), 922, 2007.
- A. G. Hoekstra, E. Lorenz, J.-L. Falcone, and B. Chopard, *Toward a Complex Automata Formalism for MultiScale Modeling*, Int. J. Multiscale Comput. Eng. 5, 491, 2007.
- A. Caiazzo, D. Evans, J.-L. Falcone, J. Hegewald, E. Lorenz, B. Stahl, D. Wang, J. Bernsdorf, B. Chopard, J. Gunn, R. Hose, M. Krafczyk, P. Lawford, and A. Hoekstra, *Towards a Complex Automata for Multiscale Model of In-stent Restenosis*, ICCS 2009, LNCS 5544, 705, Springer, Berlin, Heidelberg, 2009.

abstracts at conferences:

- E. Lorenz, and A. G. Hoekstra, *Lattice-Boltzmann Simulations of Particulate Suspensions in a Sheared Flow*, Book of Abstracts, CompPhys 2007, Leipzig, 2007.
- E. Lorenz, and A. G. Hoekstra, *Towards Multi-scale Lattice Boltzmann simulations of two-dimensional suspensions*, Book of abstracts, ICMMS 2007, Munich, 2007.

- E. Lorenz, and A. G. Hoekstra, *Lees-Edwards Boundary Conditions for Lattice-Boltzmann Suspensions enabling Investigations of Shear Thickening Phenomena in a Pseudo-infinite System*, Book of Abstracts, ICMMES 2008, Amsterdam, 2008.
- E. Lorenz, and A. G. Hoekstra, *Scaling of Cluster Sizes and Apparent Viscosity in two dimensional Lattice-Boltzmann Simulations of Sheared Suspensions*, Book of Abstracts, DSFD 2009, Beijing, 2009.
- E. Lorenz, and A. G. Hoekstra, *Distributions of Cluster Sizes in Shear-Thickening Suspensions derived from a Statistical Clustering Model*, Book of Abstracts, DSFD 2010, Rome, 2010.

accepted for publication:

- A. Caiazzo, D. Evans, J.-L. Falcone, J. Hegewald, E. Lorenz, B. Stahl, D. Wang, J. Bernsdorf, B. Chopard, J. Gunn, R. Hose, M. Krafczyk, P. Lawford, R. Smallwood, D. Walker, A. Hoekstra, *A Complex Automata approach for In-stent Restenosis: two-dimensional multiscale modeling and simulations*, accepted for publication in the Journal of Computational Science.

submitted:

- E. Lorenz, and Alfons G. Hoekstra, *Heterogeneous Multi-scale Simulations of Suspension Flow*, submitted to SIAM Multiscale Modeling and Simulation.

in preparation:

- E. Lorenz, and A. G. Hoekstra, *Particle Clustering in Shear-Thickening of Hard-Sphere Suspensions*.
- E. Lorenz, and A. G. Hoekstra, *Temporal Scale Splitting of the Dynamics of Solid and Fluid Phase in Lattice-Boltzmann Simulations of Sheared Suspensions*.
- E. Lorenz, and A. G. Hoekstra, *The Use of a Database in HMM Simulations of Suspension Flow*.