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From Newton to Cellular Automata

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(Submitted on 10 Dec 2009)

I outline a possible logical path from the formulation of physics of classical mechanics to "abstract" systems like cellular automata. The goal of this article is that of illustrating why physicists often study extremely simplified models, instead of just numerically integrating the fundamental equations of physics. This exposition is obviously only partial and based on my expertise and my interests.

Comments:	A similar version of this text appeared under the title "Interaction Based Computing in Physics" in the "Encyclopedia of Complexity and System Science", Springer, New York 2009 p. 4902
Subjects:	**Popular Physics (physics.pop-ph)**; Adaptation and Self-Organizing Systems (nlin.AO); Cellular Automata and Lattice Gases (nlin.CG); Computational Physics (physics.comp-ph)
Cite as:	**arXiv:0912.2056v1 [physics.pop-ph]**

Submission history

From: Franco Bagnoli [view email]
[v1] Thu, 10 Dec 2009 17:23:08 GMT (83kb)

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