

Algorithmic Coarsening of Computationally Irreducible Complex Systems

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In this study, we developed an algorithm to determine coarsenings for cellular automata (CA) rules. The algorithmic coarsening of systems that exhibit complex behavior, such as CA, can be used to drastically decrease the computing power and time required to model these systems. These computationally simpler coarse-grained models could be used to accurately determine macroscopic properties of the fine-grained system.