

Abstract Submitted
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Non-deterministic self-assembly of two tile types on a lattice SALVATORE TESORO, University of Cambridge — I will present a complex behaviour that is both interesting from a statistical and complex systems point of view and from a more abstract point of view on complexity and evolutionary theory. I will introduce simple a theoretical framework to predict and describe all possible growth behaviours that self-assembly of two tile types can produce on a 2D lattice, given binary interaction rules between the faces of the tiles in the system. Such simple set up can give rise to critical transitions between bound and unbound growth regimes and other non-critical behaviours. I will illustrate how this work completes efforts conducted by Ahnert et Al. in the field of Complexity and Evolution, whereby deterministic self-assembly pathways have been exploited as a useful tool in addressing questions on complexity and modularity in nature. I will further show how this theoretical framework can be experimentally verified using DNA-tiles as a building material and providing experimental validation of the theoretical predictions made.

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