



Friday, January 12, 2018 | 4.30 pm
Theoretical Physics Seminar Room
Zülpicher Straße 77a

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Universal hidden order in amorphous cellular geometries

Starting from an amorphous partitioning of space into cells, we iteratively optimize the 'centrality' of the cells, minimizing the so-called Quantizer energy. The energy landscape is replete with local minima to which the system converges despite the existence of lower-energy crystalline configurations. Irrespective of the level and type of disorder in the initial configurations, the tessellations converge to the same amorphous state, as measured by the same structure factor and energy distributions. The final disordered configurations exhibit an anomalous suppression of long-wavelength density fluctuations, known as hyperuniformity. For systems related to the Quantizer problem, such as selfassembled copolymeric phases, our findings suggest the possibility of stable disordered hyperuniform phases.

