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Probability Distribution at the Onset of Chaos and Transport Systems

The probability distributions of the visited positions of nonlinear maps after the onset of chaos are smooth and, with an adequately defined map, can lead to transport phenomena. However, not much is known about what occurs at the critical parameter value. Ben Good and Juan Diego Rodriguez will investigate the fractal probability distribution given by the return map at the critical value, where the Central Limit Theorem no longer holds, and see whether this system is capable of simulating transport phenomena. (Miguel Fuentes, Eric Smith)

Structure of a ramified charge transportation network

We will analyse the structure of a dendritic network of conducting particles in an electric field using graph theoretic techniques. The evolution - both growth and decay - of the network can also be analysed using graph theoretic properties of the network. (Alfred Hubler)