

Diffusion on disordered fractals

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Abstract

Diffusion in disordered media shows anomalous behavior for certain length scales. In order to model anomalous diffusion random-walks on regular fractals were usually used. Here we study disordered fractals in an attempt to capture the random nature of the disordered material by randomly mixing different Sierpinski carpet generators. In particular, we investigate the diffusion on the resulting fractals by random-walk simulations and exact enumeration. We find that the random-walk exponent d_w shows a strong dependence on the mixture composition. Beyond that we consider the influence of external fields on the movement of the diffusing particles.