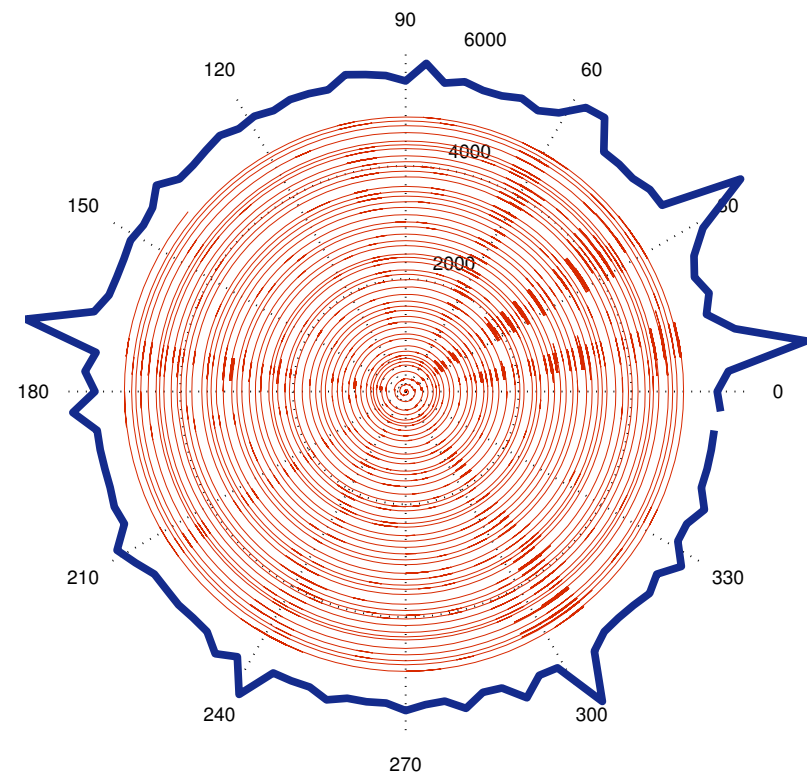
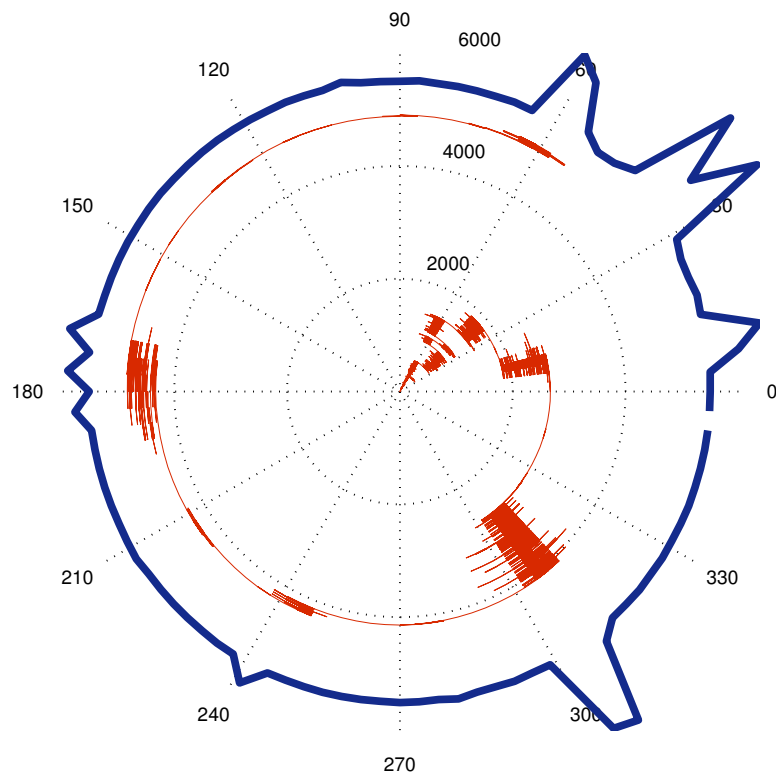


Percolation, sliding, localization and relaxation in glassy circuits

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Brownian motion

The Einstein-Smoluchowski Relation (ESR):

$$D = \mu k_B T, \quad k_B = 1$$

Relation between mobility (μ) and diffusion (D) reflecting microscopics (k_B) in universal way.

This is a special case of a **fluctuation-dissipation relation** between first and second moments.

Drift: $\langle x \rangle = vt, \quad v = \mu F$

Diffusion: $\text{Var}(x) = 2Dt$

ESR: $\frac{v}{D} = \frac{F}{T} \equiv s = \text{affinity (linear response)}$

$s \equiv$ entropy-production-per-distance

FDT is valid close to equilibrium.

To what extent does the ESR hold?

Can it be derived from the NFT?

Non-equilibrium version?

Percolation

Sinai spreading

Localization