Intermittency in turbulent dynamo models: which moment predicts the threshold?

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Simple model,

$$\dot{x} = (\mu + \zeta(t))\, x - x^3, \langle \zeta(t)\zeta(t') \rangle = 2D\delta(t - t').$$

Linearized equation,

$$\dot{x} = (\mu + \zeta(t))\, x$$

Threshold different for different moments of x.

$$\mu_c(n) = -nD/2$$

The onset given by the nonlinear equation is $\mu_c = 0$.

Instability on a turbulent flow

Dynamo instability by a turbulent flow, $\mathbf{u}(\mathbf{r}, t) = \zeta(t)v(\mathbf{r})$.
Kinematic dynamo problem (linearized) given by,

$$\partial_t \mathbf{B} = \boldsymbol{\nabla} \times (\mathbf{u} \times \mathbf{B}) + \eta \Delta \mathbf{B}$$

Magnetic field $\mathbf{B}$ has a fluctuating growth rate.

Results,

1. Using Large deviation functions, the growth rate of the different moments of $\mathbf{B}$ is found.
2. Different moments predict different threshold.
3. Using different nonlinear models we show numerically that the moment $n \to 0+$ predicts the correct threshold of the dynamo instability.