High Energy Physics - Theory

String Theory and Turbulence

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We propose a string theory of turbulence that explains the Kolmogorov scaling in 3+1 dimensions and the Kraichnan and Kolmogorov scalings in 2+1 dimensions. This string theory of turbulence should be understood in light of the AdS/CFT dictionary. Our argument is crucially based on the use of Migdal's loop variables and the self-consistent solutions of Migdal's loop equations for turbulence. In particular, there is an area law for turbulence in 2+1 dimensions related to the Kraichnan scaling.

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