1128-35-267 **Radu Dascaliuc***, Department of Mathematics, Oregon State University, Corvallis, OR 97331-4605. *Multiplicative cascades approach to regularity: a case-study of the complex Burgers equation.*

The use of stochastic cascades to study the 3D Navier-Stokes equations (NSE) was originated by Le Jan and Sznitman in 1997. Under this approach, the mild solution in Fourier space is viewed as an expected value of a random variable over a stochastic process. As a result, the well-posedness is re-cast in terms of probabilistic analysis of a random process. More recently, this approach was used to connect the NSE uniqueness problem to the uniqueness of the self-similar solutions, suggesting that NSE regularity is closely connected to the natural scaling symmetries. To further illustrate the potential usefulness of such approach to study nonlinear evolution PDE, we will consider a much simpler case of complex Burgers equations, where explicit nature of probabilistic distributions allows us to prove existence and uniqueness of mild solutions in the widest invariant space, without smallness assumptions on the initial data. Moreover, our study of the associated cascade yielded several surprising results related to the long-time behavior of the solutions. We will conclude by discussing in which ways these results might be extended to the full NSE problem.

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