

1103-00-2

Sourav Chatterjee*, New York University, New York. *Nonlinear large deviations.*

How many graphs on a given number of vertices contain approximately a given number of triangles? This is a combinatorial question that falls under the purview of the probabilistic theory of rare events, also known as the theory of large deviations. Surprisingly, this simple sounding question does not have a straightforward solution using classical large deviation techniques. The reason is that classical large deviations is mainly a linear theory, whereas this is a nonlinear problem. In a joint work with S. R. S. Varadhan, we solved this problem a few years ago. The solution, however, involved specialized tools from graph theory such as Szemerédi's regularity lemma. In this talk, I will present an attempt at building a new abstract theory for computing probabilities of rare events in nonlinear settings. In particular, it yields an elementary solution of the above problem and much more. This is based on joint work with Amir Dembo. (Received April 30, 2013)