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**Linyuan Lu\*** (lu@math.sc.edu), Columbia, SC 29208-0001, and **Zhiyu Wang** (zhiyuw@math.sc.edu), Columbia, SC 29208-0001. *Concentration inequalities in spaces of random configurations with positive Ricci curvatures.*

In this talk, we prove an Azuma-Hoeffding-type inequality in several classical models of random configurations, including the Erdős-Rényi random graph models  $G(n, p)$  and  $G(n, M)$ , the random  $d$ -out(in)-regular directed graphs, and the space of random permutations. The main idea is using Ollivier's work on the Ricci curvature of Markov chains on metric spaces. Here we give a cleaner form of such concentration inequality in graphs. Namely, we show that for any Lipschitz function  $f$  on any graph (equipped with an ergodic random walk and thus an invariant distribution  $\nu$ ) with Ricci curvature at least  $\kappa > 0$ , we have

$$\nu(|f - E_\nu f| \geq t) \leq 2 \exp\left(-\frac{t^2 \kappa}{7}\right).$$

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