

1161-60-64

**Mokshay Madiman\*** ([madiman@udel.edu](mailto:madiman@udel.edu)). *The regularization effect of certain Markov semigroups on integrable functions.*

In 1989, Talagrand proposed a conjecture regarding the regularization effect on integrable functions of a natural Markov semigroup on the Boolean hypercube. While this conjecture remains unresolved, the analogous conjecture for the Ornstein-Uhlenbeck semigroup was recently resolved by Eldan-Lee and Lehec, by combining an inequality for the log-Hessian of this semigroup with a new deviation inequality for log-semiconvex functions under Gaussian measure. Our first goal is to explore the validity of both these ingredients for a number of semigroups (the  $M/M/\infty$  queue on  $\mathbb{Z}_+$ , the Laguerre semigroups on  $\mathbb{R}_+$ , and certain diffusions in  $\mathbb{R}^n$ ). Our second goal is to prove an analogue of Talagrand's conjecture for these settings, even in those cases where these ingredients are not valid. This is joint work with Nathael Gozlan, Xue-Mei Li, Cyril Roberto, and Paul-Marie Samson. (Received August 08, 2020)