

# 概率论系列报告

报告题目 (Title): Spectral gap for spherically symmetric  
log-concave probability measures, and  
beyond

报告人 (Speaker): 马宇韬 副教授 北京师范大学

时间 (Time): 9月29日(周一) 下午 3:00-4:00

地点 (Venue): 北京大学理科一号楼 1303

**摘要 (Abstract):** Let  $\mu$  be a probability measure on  $\mathbb{R}^n$ , ( $n \geq 2$ ) with Lebesgue density proportional to  $e^{-V(\|x\|)}$ , where  $V: \mathbb{R}_+ \rightarrow \mathbb{R}$  is a smooth convex potential. We show that the associated spectral gap in  $L^2(\mu)$  lies between  $(n-1)/\int_{\mathbb{R}^n} \|x\|^2 \mu(dx)$  and  $n/\int_{\mathbb{R}^n} \|x\|^2 \mu(dx)$ , improving a well-known two-sided estimate due to Bobkov. Our Markovian approach is remarkably simple and is sufficiently robust to be extended beyond the log-concave case, at the price of potentially modifying the underlying dynamics in the energy, leading to weighted Poincaré inequalities. All our results are illustrated by some classical and less classical examples. This is Joint work with M. Bonnefont, A., Joulin.

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