1161-60-151 **Grigorios Paouris**, **Konstantin Tikhomirov** and **Petros Valettas***
(valettasp@missouri.edu). *Hypercontractivity, and lower deviation estimates in normed spaces.*

We consider the problem of estimating probabilities of lower deviation $\mathbb{P}\{\|G\| \leqslant \delta \mathbb{E}\|G\|\}$ in normed spaces with respect to the Gaussian measure. These estimates occupy central role in the probabilistic study of high-dimensional structures. It has been confirmed in several concrete situations, using ad hoc methods, that lower deviations exhibit very different and more complex behavior than the corresponding upper estimates. In this work we develop a general method for proving small ball estimates for norms. In the case of 1–unconditional norms our bounds are best possible up to numerical constants. We also study the lower small deviation estimates for both 1-unconditional and general norms and we obtain optimal results. In all regimes, $\|G\|_\infty$ arises (at the computational level) as an extremal case in the problem. The proofs exploit the convexity and hypercontractive properties of the Gaussian measure. (Received August 15, 2020)