Spectral flatness and the volume of intersections of p-ellipsoids

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Motivated by classical works of Schechtman and Schmuckenschläger on intersections of ℓ_p-balls and recent ones in information-based complexity relating random sections of ellipsoids and the quality of random information in approximation problems, we study the threshold behavior of the asymptotic volume of intersections of generalized p-ellipsoids. The non-critical behavior is determined under a spectral flatness (Wiener entropy) condition on the semi-axes. In order to understand the critical case at the threshold, we prove a central limit theorem for q-norms of points sampled uniformly at random from a p-ellipsoid, which is obtained under Noether's condition on the semi-axes.

This talk is based on joint work with my supervisor, Joscha Prochno.