ELI PUTTERMAN, Tel Aviv University

Small-ball probabilities for mean widths of random polytopes

The classical theory of random polytopes addresses questions such as computing the expectation or variance of geometric parameters associated to a random polytope (e.g., volume, number of facets, or mean width); more recent theory also aims to obtain concentration of measure for such quantities. The new theory of higher-order projection bodies naturally leads to a question in random polytopes which current theory, surprisingly, does not address: bounding a high negative moment of the mean width of a certain random polytope, which requires bounding the probability that this mean width is a small fraction of its expectation ("small-ball estimates"). These small-ball estimates use different tools from those commonly employed in the field of random polytopes, and it turns out that the behavior of the negative moment demonstrates a phase transition. We will conclude by mentioning some related open problems.