Abstract:

Consider two half-spaces H_1^+ and H_2^+ in $\mathbb{R}^{d+1}$ whose bounding hyperplanes H_1 and H_2 are orthogonal and pass through the origin. The intersection $\mathbb{S}^d_{2,+} := \mathbb{S}^d \cap H_1^+ \cap H_2^+$ is a spherical convex subset of the d-dimensional unit sphere $\mathbb{S}^d$ and is called a spherical wedge.
Choose n independent random points uniformly at random on $\mathbb{S}^d_{2,+}$ and consider the expected facet number of the spherical convex hull of these points. It is shown that, up to terms of lower order, this expectation grows like a constant multiple of $\log n$.
The result is compared to the corresponding behavior of classical Euclidean random polytopes and of spherical random polytopes on a half-sphere.

Based on joint work with Florian Besau, Anna Gusakova, Matthias Reitzner, Carsten Schütt and Christoph Thäle.