Extremality of the mean width and the ℓ-norm

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(Joint work with Ferenc Fodor and Daniel Hug)

Barthe, Schechtman and Schmuckenschlager proved that the cube maximizes the mean width of symmetric convex bodies whose John ellipsoid (maximal volume ellipsoid contained in the body) is the centered Euclidean unit ball, and the regular crosspolytope minimizes the mean width of symmetric convex bodies whose Lowner ellipsoid is the centered Euclidean unit ball. In addition, the extremality of the regular simplex without the symmetry assumption has been verified. In the talk, we discuss close to be optimal stronger stability versions of these results, together with their counterparts about the ℓ-norm based on Gaussian integrals. We also consider related stability results for the mean width and the ℓ-norm of the convex hull of the support of (even) isotropic measures on the unit sphere.