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Vortragstitel:

Weinstock inequality in higher dimensions

Zusammenfassung:

An isoperimetric inequality of Weinstock states that $\sigma(\Omega)P(\Omega) \leq \sigma(B)P(B)$ for all planar simply connected sets . Here B denotes a disc, $P(\Omega)$ the perimeter of Ω and $\sigma(\Omega)$ the first nonzero Steklov eigenvalue of, which is characterized by

$$\sigma(\Omega) := \min \left\{ \frac{\int_\Omega |\nabla v|^2 dx}{\int_{\partial\Omega} v^2 d\sigma_x} : v \in H^1(\Omega) \setminus \{0\}, \int_{\partial\Omega} v d\sigma_x = 0 \right\}.$$

It is known that the inequality fails for certain domains in $\mathbf{R}^3$.
We consider the problem of extending Weinstock inequality for the first nonzero Steklov eigenvalue to the case of convex sets in $\mathbf{R}^n$, for $n \geq 3$.
A key result is a sharp isoperimetric inequality involving simultaneously the surface area, the volume and the boundary momentum of convex sets. Applications to isoperimetric inequalities for the first Wentzell eigenvalue will be also discussed.

Referenz:

[1] D. Bucur, V. Ferone, C. Nitsch, C. Trombetti, Weinstock inequality in higher dimensions, to appear on J. Diff. Geometry, arXiv:1710.04587.

Um 16 Uhr gibt es Tee in der Bibliothek der Mathematik, Weyertal 86 – 90, 50931 Köln, Erdgeschoss Raum 0.18 – 0.20. Alle Interessent_innen sind herzlich eingeladen.