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Hadwiger's Conjecture for Cap Bodies

Hadwiger's covering conjecture states that every n -dimensional convex body can be covered by at most 2^n smaller positive homothetic copies of itself, with 2^n copies required only for affine images of the n -cube. Despite recent progress on the Hadwiger's conjecture, it remains open in general, as well as for specific classes of bodies.

In this talk, I will show that the conjecture holds for the class of cap bodies in all dimensions. For $3 \leq n \leq 15$, the proof combines a probabilistic technique with reduction to integer linear programming. For $n \geq 15$, we obtain an explicit bound based on the same probabilistic technique but avoiding computer aid. Furthermore, for $n = 3$, we prove that the value of the covering number for the class of cap bodies is 6.

This talk is based on joint work with A. Arman and A. Prymak.