

# Extensions of Minkowski's theorems on successive minima

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Several extensions of Minkowski's theorems will be presented; we will analyze the results of a discrete analogue, conjectured by Betke, Henk, and Wills in 1993, where the volume is replaced by the lattice point enumerator. We will outline the proof for the 3-dimensional case, as well as the proof for a weaker inequality for the general case (both proven by the speaker). In 2010, Bey, Henk, Henze and Linke proved this conjecture for two classes of lattice polytopes, namely parallelepipeds and lattice-face polytopes. If time permits, we will see we will see Davenport's conjecture, that involves the density of the densest lattice packing, and Gaudron's applications of adelic analogues of Minkowski's theorems, thus producing generalizations of Siegel's lemma concerning minimal heights of nonzero vectors in vector spaces over number fields.