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Discrete Brunn-Minkowski theory

The Brunn-Minkowski inequality is a fundamental result in convex geometry asserting that for sets $A, B \subset \mathbb{R}^n$ of the same volume and a parameter $t \in (0, 1)$, we have $|tA + (1-t)B| \geq |A|$ with equality iff A and B are essentially the same convex set up to translation. We will explore how the study of discrete sumsets, including e.g. Freiman's theorem, can provide insights into the stability of this continuous Brunn-Minkowski inequality.