

Abstract for *What is the Busemann-Petty Problem?*

Let K and L be two origin-symmetric convex bodies in \mathbb{R}^n such that the $(n-1)$ -dimensional volume of each $(n-1)$ -dimensional central section of K is less than or equal to the $(n-1)$ -dimensional volume of the corresponding $(n-1)$ -dimensional central section of L . The Busemann-Petty problem asks the following: is the n -dimensional volume of K also less than or equal to the n -dimensional volume of L ? Surprisingly, the answer depends on the dimension n : it is affirmative for $n \leq 4$ and negative for $n \geq 5$. A brief outline of the proof is given and the significance of the dimension boundary is shown. Also, Ball's theorem on volumes of hyperplane sections provides counterexamples for dimensions $n \geq 10$.