

Title:

Radon transforms supported in hypersurfaces

Abstract:

If the Radon transform of a compactly supported distribution is supported in the set of tangent planes to a bounded convex domain $D \subset \mathbb{R}^n$, then the boundary of D must be an ellipsoid. I will briefly recall the background for this theorem, sketch its proof, and describe some recent related results and open problems. This result turned out to imply the solution of a special case (solved by Koldobsky, Merkurev, and Yaskin 2017) of a problem by Arnold that originated from a famous lemma of Newton. Moreover, similar arguments prove a local result that connects the analytic wave front set of a distribution with singularities of the boundary of its support, which is related to Hörmander's proof of Holmgren's theorem.