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Microlocal analysis of d-plane transform on the Euclidean space

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The d-plane transform is defined by integrals of functions on the n-dimensional Euclidean space over all the d-dimensional planes. where 0<d<n. This maps functions on the Euclidean space to those on the affine Grassmannian G(d,n). This is said to be X-ray transform if d=1 and Radon transform if d=n-1. When n=2 the X-ray transform is thought to be measurements of CT scanners. In this talk we begin with the basic properties of the d-plane transform, and talk about concrete expression of the canonical relation of the d-plane transform and quantitative properties of the product of the image of the d-plane transforms. The latter one is related to the streaking artifact of CT image, and some generalization of recent results of Park-Choi-Seo (2017) and Palacios-Uhlmann-Wang (2018) for the X-ray transform on the plane.