Meeting: 1003, Atlanta, Georgia, SS 5A, AMS Special Session on Radon Transform and Inverse Problems, I

1003-44-1079 **Karthik Ramaseshan*** (karthik@math.rochester.edu), Department of Mathematics, Hylan Building, University of Rochester, Rochester, NY 14627. *Microlocal analysis of the Doppler transform on* $\mathbb{R}^3$.

Let $F = (f_1, f_2, f_3)$ be a compactly supported vector field on $\mathbb{R}^3$. The Doppler transform of F is defined by

$$\mathcal{D}F(x, \omega) = \int_{\mathbb{R}} \sum_j \omega_j f_j(x + t\omega)\, dt$$

where $x \in \mathbb{R}^3$ and $\omega \in S^2$ together specify a line in $\mathbb{R}^3$. Given a smooth curve C in $\mathbb{R}^3$ we consider $\mathcal{D}_C$, the Doppler transform restricted to lines intersecting C. We determine the extent to which the singularities of F can be recovered from those of $\mathcal{D}_C F$. (Received October 03, 2004)