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

\[
DF(x, \omega) = \int_{\mathbb{R}} \sum_j \omega_j f_j(x + t\omega) \, dt
\]

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)