

Normal operators of double fibration transforms

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We study the structure of normal operators of double fibration transforms with conjugate points. Examples of double fibration transforms include Radon transforms, d -plane transforms on the Euclidean space, geodesic X-ray transforms, light-ray transforms, and ray transforms defined by null bicharacteristics associated with real principal type operators. We show that, under certain stable conditions on the distribution of conjugate points, the normal operator splits into an elliptic pseudodifferential operator and several Fourier integral operators, according to the degree of the conjugate points.