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Estimates for Fourier integral operators with both singular symbols and folds

Operators which exhibit both "singular Radon transform"- like singularities and degeneracy in the underlying geometry arise in various applications. I will discuss recent work motivated by seismic imaging, where the presence of caustics or conjugate points for the background wave propagator may result in artifacts in the images. The most prevalent type of caustics, folds, produces imaging operators in a class that extends both singular Radon transforms and the folding FIOs of Melrose and Taylor, and estimates for these, which include a loss of derivatives in some cases, can be obtained by an elaboration of the Phong-Stein-Cuccagna decomposition. This is joint work with Raluca Felea and Malabika Pramanik.