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Raluca Felea* (rxfsma@rit.edu), Rochester Institute of Technology, School of Mathematical Sciences, Rochester, NY 14623. *FIOs with open umbrellas*.

We consider the composition calculus of Fourier integral operators (FIOs) with cusp singularities which appear in seismic inverse problems. To reconstruct the singularities in the forward operator F , one needs to consider the normal operator F^*F . We will show that artifacts appear since the wave front set of the normal operator is in the union of the diagonal and the open umbrella which is a singular Lagrangian. (Received February 15, 2010)