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Raluca Felea* (rxfsma@rit.edu), School of Mathematical Sciences, Rochester Institute of Technology, Rochester, NY 14623. *FIOs with fold and cusp singularities.*

We consider the composition of Fourier integral operators (FIOs) with certain singularities: two-sided folds and cusps for which the composition operator is not again a FIO. We show that its kernel belongs to a class of distributions associated to two Lagrangians. Such operators appear in linearized inverse problems from seismology for the acoustic wave equation where the normal operator F^*F is used to recover the soundspeed within the earth. (Received December 27, 2009)