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Alexander Katsevich* (alexander.katsevich@ucf.edu). *Broken ray transform: inversion and a range condition.*

In this talk we study a class of Broken-Ray transforms (BRT), which can be implemented with flat and/or curved detectors. In the case of two detectors we obtain an inversion formula, which involves a second order derivative of the data and integration along characteristics. In the case of three detectors, we obtain an inversion formula, which is purely local and involves only the first order derivatives of the data. Hence the formula solves the interior problem. Neither the object nor the source and detectors require to be rotated in order to obtain a complete data set. We also prove a theorem, which describes the range of the BRT in the case of three detectors. Finally, the results of numerical experiments are presented. (Received January 21, 2014)