

Hertle, Alexander**On the problem of well-posedness for the Radon transform.** (English) [Zbl 0555.46020](#)

Mathematical aspects of computerized tomography, Proc., Oberwolfach 1980, Lect. Notes Med. Inf. 8, 36-44 (1981).

[For the entire collection see [Zbl 0538.00034](#).]

Some inverse continuity and discontinuity properties of the classical Radon transform R are discussed. First, a compactly supported sequence (f_k) of L^1 functions is exhibited, such that Rf_k converges uniformly, but f_k does not converge weakly (thus inversion of R cannot be properly posed within a function space set-up). On the other hand, partial results on inverse continuity for some Sobolev, measure, and distribution spaces are given. - In subsequent papers, the continuity behaviour of R^{-1} (and its consequences for the range of R) has been described completely for Sobolev and classical test function and distribution spaces [*A. Hertle*, *Math. Z.* 184, 164-192 (1983; [Zbl 0507.46036](#)) and *Math. Ann.* 267, 91-99 (1984)], and for Sobolev and measure spaces by *M. G. Hahn* and *E. T. Quinto* [*Z. Wahrscheinlichkeitstheorie* (to appear; [Zbl 0555.28005](#))].

MSC:[46F12](#) Integral transforms in distribution spaces[46E35](#) Sobolev spaces and other spaces of "smooth" functions, embedding theorems, trace theorems[44A05](#) General integral transforms[44A15](#) Special integral transforms (Legendre, Hilbert, etc.)

Cited in 1 Document

Keywords:

inverse continuity and discontinuity properties of the classical Radon transform; inverse continuity for some Sobolev, measure, and distribution spaces