Contents

Preface ix

An inversion formula for the horocyclic Radon transform on the real hyperbolic space
CARLOS A. BERENSTEIN AND ENRICO CASADIO TARABUSI 1

Image reconstruction and dense subspaces in the range of the radon transform
W. K. CHEUNG AND ANDREW MARKOE 7

On a spatial limited angle model for X-ray computerized tomography
ARLENE CORREA, RODNEY CRUZ, AND PABLO M. SALZBERG 25

The backpropagation method in inverse acoustics
GIOVANNI F. CROSTA 35

Some nonlinear aspects of the radon transform
LEON EHRENPREIS 69

Spherical tomography and spherical integral geometry
SIMON GINDIKIN, JIM REEDS, AND LARRY SHEPP 83

That kappa operator: Gelfand-Graev-Shapiro inversion and radon transforms on isotropic planes
E. L. GRINBERG 93

On uniqueness in the inverse conductivity problem with one boundary measurement
VICTOR ISAKOV 105

A method for finding discontinuities of functions from the tomographic data
A. I. KATSEVICH AND A. G. RAMM 115

Probability measure estimation using "weak" loss functions in positron emission tomography
ALVIN KURUC 125

On stability estimates in the exterior problem for the radon transform
SERGUEI LISSIANOI 143

Data correction and restoration in emission tomography
SERGE J. LVIN 149

On problems of integral geometry in the non-convex domains
R. MUKHOMETOV 157

Recent developments in X-ray tomography
F. NATTERER 177

Some mathematical aspects of 3D X-ray tomography
V. P. PALAMODOV 199

A note on consistency conditions in three dimensional diffuse tomography
S. K. PATCH 211

Radon transforms on curves in the plane
ERIC TODD QUINTO 231

Inverse boundary value problems for first order perturbations of the Laplacian
GUNTHER UHLMANN 245

Multidimensional analogue of the Erdélyi lemma and the radon transform
ALEXANDER I. ZASLAVSKY 259

On the Willmore deficit of convex surfaces
JIAZU ZHOU 279