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Nota di contenuto	Helgason's support theorem for Radon transforms — A new proof and a generalization -- Singular value decompositions for Radon transforms -- Image reconstruction in Hilbert space -- A problem of integral geometry for a family of rays with multiple reflections -- Inversion formulas for the three-dimensional ray transform -- Backscattered photons — Are they useful for a surface-near tomography? -- Mathematical framework of cone beam 3D reconstruction via the first derivative of the radon transform -- Diffraction tomography some applications and extension to 3-D ultrasound imaging -- Diffuse tomography: A refined model -- Three dimensional reconstructions in inverse obstacle scattering -- Mathematical questions of a biomagnetic imaging problem -- On variable block algebraic reconstruction techniques -- On Volterra-Lotka differential equations and multiplicative algorithms for monotone complementarity problems -- Constrained regularized least squares problems -- Multiplicative iterative methods in computed tomography -- Remark on the informative content of few measurements -- Theorems for the number of zeros of the projection radial modulators of the 2D exponential radon transform -- Evaluation of reconstruction algorithms -- Radon transform and analog coding -- Determination of the specific density of an aerosol through tomography -- Computed tomography and

rockets.

Sommario/riassunto

The conference was devoted to the discussion of present and future techniques in medical imaging, including 3D x-ray CT, ultrasound and diffraction tomography, and biomagnetic imaging. The mathematical models, their theoretical aspects and the development of algorithms were treated. The proceedings contains surveys on reconstruction in inverse obstacle scattering, inversion in 3D, and constrained least squares problems. Research papers include besides the mentioned imaging techniques presentations on image reconstruction in Hilbert spaces, singular value decompositions, 3D cone beam reconstruction, diffuse tomography, regularization of ill-posed problems, evaluation reconstruction algorithms and applications in non-medical fields. Contents: Theoretical Aspects: J.Boman: Helgason' s support theorem for Radon transforms-a new proof and a generalization -P.Maass: Singular value de- compositions for Radon transforms- W.R. Madych: Image reconstruction in Hilbert space -R.G. Mukhometov: A problem of integral geometry for a family of rays with multiple reflections -V.P. Palamodov: Inversion formulas for the three-dimensional ray transform - Medical Imaging Techniques: V. Friedrich: Backscattered Photons - are they useful for a surface - near tomography - P.Grangeat: Mathematical frame- work of cone beam 3D reconstruction via the first derivative of the Radon transform -P.Grassin, B.Duchene, W.Tabbara: Dif- fraction tomography: some applications and extension to 3D ultrasound imaging -F.A.Gr}nbaum: Diffuse tomography: a refined model -R.Kress,A.Zinn: Three dimensional reconstructions in inverse obstacle scattering -A.K.Louis: Mathematical questions of a biomagnetic imaging problem - Inverse Problems and Optimization: Y. Censor: On variable block algebraic reconstruction techniques -P.P. Eggermont: On Volterra-Lotka differential equations and multiplicative algorithms for monotone complementary problems.