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Hanna E Makaruk* (hanna_m@lanl.gov), MS D410, Los Alamos, NM 87545. *Information provided by volumes of negative density in Inverse Abel method of 3D objects reconstruction from radiographic images.* Preliminary report.

Inverse Abel transform method is a standard method used in various applications for reconstructing densities of axially symmetric objects from a single radiographic image. Real life objects frequently violate the assumption of perfect axial symmetry, what strongly influences reconstruction and in some cases leads to reconstruction of volumes with negative density assigned. This non-physical result provides valuable information about the 3D object. In the talk formulas which allow to reconstruct either location and size, or location and density of the non-axially symmetric part of the object, will be presented. Simple geometrical objects a sphere, a cube, an ellipsoid serve as examples. A radiogram from a real Proton Radiography experiment will be discussed too. (Received February 23, 2010)