1078-65-249   **Stefano De Marchi*** (`demarchi@math.unipd.it`), Via Trieste, 63, 35121 Padova, Italy, and **Amos Sironi**. *A kernel based method for medical image reconstruction.* Preliminary report.

The image reconstruction problem consists in finding an approximation of a function f starting from its Radon transform.

This problem arises in the framework of medical imaging when one wants to reconstruct the internal structure of a sample starting from its X-rays tomography.

Classical reconstruction methods are based on the *back projection formula.*

In this paper we propose an alternative approach that uses positive de finite kernel functions and that can be applied also in presence of scattered data. We approximate the function f using Hermite-Birkhoff interpolation, introducing a regularization technique that is needed when the Radon transform of a kernel basis function is in finity. (Received December 10, 2011)