Structural Priors in Multi-Energy CT Reconstruction

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Conference on Modern Challenges in Imaging August 6, 2019 Specific knowledge about the material composition of the target in computed tomography (CT) imaging can be obtained by using *multi-energy* (MECT).

In this work we form a scheme for *joint reconstruction*, based on the assumption that although the images will have different contrasts at different energies, the underlying structure remains the same.

In this approach we combine all the datasets into a single problem that is solved simultaneously for all images, and the objective function to be minimized is

$$F(x_1,...,x_n) = \sum_{i=1}^n ||m_i - A_i x_i||^2 + \alpha R(x_1,...,x_n).$$
(1)

We imaged a physical phantom using 3 different X-ray energies and experimented with 6 different types of regularization schemes $R(x_1, \ldots, x_n)$.

