

**APPLICATIONS OF A NONNEGATIVELY CONSTRAINED ITERATIVE
METHOD WITH STATISTICALLY BASED STOPPING RULES TO CT, PET, AND
SPECT IMAGING ***

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Abstract. In this paper, we extend a nonnegatively constrained iterative method and three stopping rules for its iteration to the medical imaging inverse problems of computed tomography (CT), positron emission tomography (PET), and single photon emission computed tomography (SPECT); the iterative method and stopping rules were introduced for the use in astronomical imaging. The paper begins with a brief introduction to the CT, PET, and SPECT mathematical and statistical models.

Key words. nonnegatively constrained iterative methods, inverse problems, statistical methods, medical imaging

AMS subject classifications. 65J22, 65K10, 65F22

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