PROXIMAL RECONSTRUCTION METHODS FOR DYNAMIC INVERSE PROBLEMS IN EMISSION TOMOGRAPHY

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Abstract. In dynamic SPECT tomography we study the dynamics of physiological processes and biochemical functions of living organism. The mathematical formulation gives rise to a large scale dynamic inverse problem. We describe a new regularization method for computing a spatio-temporal smooth solution. Using Bregman proximity operators we analyze a splitting algorithm. The problem is solved in two steps. First we perform a spatial regularization step; following by a temporal regularization step. We establish convergence results and smoothing properties of this alternating regularization method, and show that it is able to reconstruct the time varying activity distributions. Preliminary numerical results are provided.