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# Maximum Likelihood Reconstruction for Emission Tomography

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**Abstract**—Previous models for emission tomography (ET) do not distinguish the physics of ET from that of transmission tomography. We give a more accurate general mathematical model for ET where an unknown emission density  $\lambda = \lambda(x, y, z)$  generates, and is to be reconstructed from the number of counts  $n^*(d)$  in each of  $D$  detector

porate timing information and correct for positron range and angle effects in a simple way. We discuss methods to speed convergence of the computation.