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James Vargo* (vargo@math.tamu.edu). *Reconstructing the path of a photon from 1 dimensional projected length measurements.*

Consider a piecewise differentiable curve of finite length in n dimensional space. For each line l , we orthogonally project the curve onto the line and integrate the absolute value of the resultant velocity function to obtain a measurement $M(l)$. In this talk, we will discuss the properties of the original curve that can be determined from such measurements. And we will discuss the tomography problem that gave rise to this geometry problem. (Received September 05, 2012)