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Kusha Mohammadi and **J Mealy*** (jmealy@austincollege.edu), Austin College, suite 61560, 900 North Grand Avenue, Sherman, TX 75090. *Piecewise domains in staircase metric space-times.*

Further results in the category, staircase metric geometry. After an introduction to and overview of this new general category of geometric systems, and of its associated natural methodology, we focus on the most recent extension of the category. Both in the positive definite and signature cases, $(2,0)$ and $(1,1)$, we consider parameter spaces that, while topologically path connected, are comprised of unions (possibly countably infinite) of specific non-convex subsets of planes, with each featuring a different ‘scale factor’ (or, ‘index of refraction’); the connection scheme for these subsets is straightforward. New angle change laws for geodesics are derived (governing the transitions across the parameter space pieces) in both cases. Then, a variety of complete geodesics are constructed and exhibited, notably time-like in the signature case. These can be used further to construct, in some specific systems, asymptotic polygons. Finally, we include a brief discussion of the breadth of the category, staircase metric geometry. (Received September 11, 2014)