

1116-68-1565

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Generating Crease Patterns from Prescribed Boundary Foldings.

Given a sheet of paper and a prescribed folding of its boundary, is there a way to fold the paper's interior without stretching so that the boundary lines up with the prescribed boundary folding? For polygonal boundaries nonexpansively folded at finitely many points, a consistent isometric mapping of the polygon interior always exists and is computable in polynomial time. In this talk, we expand on a construction algorithm and explore the families of producible structures. (Received September 20, 2015)