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Lattice gas methods on curved surfaces[1] DAN CIANCI, ZACHARY NEEDELL, PETER LOVE, Haverford College — We present a hydrodynamic lattice gas model for two-dimensional flows on curved surfaces with dynamical geometry. This model is the extension to two dimensions of a dynamical geometry lattice gas model studied in one-dimension. We expand upon a variation of the two-dimensional flat space model created and studied by Frisch, Hasslacher and Pomeau in 1986. Rules for dynamic geometry are constructed using the Pachner moves, which change the triangulation of our manifold but not the topology. Prior work defined the model and showed that the number of triangles lattice grows with time as, closely matching the mean field prediction. We present preliminary results of a Chapman-Enskog analysis generalized to treat the case of a lattice gas flowing on a curved two-dimensional surface.

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