Geometric Frustration in 2d crystals[1] BRIAN ALLEN, YAROSLAV CHUSHAK, ALEX TRAVESSET, Iowa State University — Two dimensional crystals on a curved manifold favor the appearance of defects, namely, dislocations and disclinations. These defects screen out the strains that arise as a consequence of the gaussian curvature. The optimal location of these defects and the actual resulting lattice structure becomes a difficult problem. In this talk we present a detailed general framework that combining elasticity theory, novel object oriented design tools and visualization techniques allow to essentially solve the problem under different situations such as different geometries (sphere, plane, torus..), lattices (triangular, square, etc..), boundary conditions, type of order (crystalline, hexatic), etc..

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