

Dynamical System Models in Kinematics of Origami Tessellations

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Kinematics of rigid origami has played a central role in the development of origami science and engineering, where we model origami as a (non-closed) flexible polyhedron. In particular, the *uniform folding* of periodic crease patterns where all the unit cells deform identically has been focused on and well-studied, which is represented by Miura-Ori.

Recently, it has become clear that *nonuniform folding* opens the way to novel nonlinear phenomena that cannot be feasible through uniform folding. In this talk, we will present one mathematical framework for analyzing nonuniform folding and show some instances of interesting phenomena, including the undulations in tubular origami tessellations explained by the conservative nature of a dynamical system, the method to extract global deformation modes of periodic origami, and the switching of the folding mode that changes a dominating dynamical system.