1056-BF-1996 **Ileana Streinu*** (istreinu@smith.edu), Computer Science Department, Smith College, Northampton, MA 01063. *Rigid origami.*

The mathematical study of origami faces many challenging questions. Most of the research has so far focused on understanding, axiomatically, the possible folding patterns of creases. But once the pattern is given, how do we fold the flat paper to a three-dimensional shape? The constraints here are: (a) topological: the paper cannot be cut or torn; (b) (geo)metric: the paper cannot be stretched or shrunk, i.e. its intrinsic metric is preserved. In rigid origami, we add a few extra, rigidity-theoretic assumptions: (c) we cannot introduce new creases, and (d) each face of the crease pattern remains flat throughout the folding process. The creased paper becomes a panel-and-hinge structure, where the individual faces can rotate (pivot) about the creases, which are viewed as hinges.

I will give an overview of what is known about the folding of single-vertex rigid origami, based on my joint work with Gaiane Panina and Walter Whiteley. (Received September 22, 2009)