1106-05-2157 **Thomas C Hull*** (thull@wne.edu). *Origami mountain-valley assignments and graph colorings.* An *origami crease pattern* is a planar graph drawn on a bounded region (the piece of paper) that represents the creases made for a paper-folded object. A *flat origami* crease pattern is, intuitively, an origami crease pattern that will fold into an object that can be pressed in a book without crumpling or adding new creases. The creases in an origami model come in two types: *Mountains*, which are convex, and *valleys*, which are concave. An assignment of mountains and valleys to a flat origami crease pattern is called *valid* if it allows the crease pattern to be folded flat without the paper self-intersecting. In this talk we will describe how mountain-valley assignments of flat origami crease patterns are equivalent to various graph coloring problems. Surprisingly, only the simplest cases are equivalent to a 2-coloring of a graph, where the mountains correspond to one color and the valleys to another. Some crease patterns correspond to 3-colorings of certain graphs and lead to interesting connections with Ising models. This work is supported by NSF grant EFRI-ODISSEI-1240441. (Received September 15, 2014)