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Jessica E Ginepro* (jessginepro@yahoo.com), 1215 Wilbraham Rd., Box 4316, Springfield, MA 01119. *Closed Formulas for Folding Some Cases of the Origami Miura Map Fold.*

Corrugation Folds are a way of folding paper into a repeated pattern that resembles corrugated cardboard. In this talk we will be dealing with a type of corrugation fold called the Herringbone Pattern, where each vertex in the crease pattern looks like a bird's foot, with two congruent obtuse angles and two congruent acute angles. An example of this is the Miura Map Fold. Every origami model is determined by its crease pattern, and all creases are either mountain creases or valley creases. Therefore, each crease pattern has a mountain valley assignment, but only some of these are valid, meaning possible to fold without tearing our paper. We let $H(m, n)$ = the number of valid mountain-valley assignments that will fold the $m \times n$ Miura Map Fold flat. We show that $H(2, n) = H(n, 2)$ and produce a recursive formula for this $2 \times n$ case, which leads to a closed formula. We will also discuss obstacles in extending these results to the $n \times 3$, $n \times 4$, etc. cases. This research conducted under the guidance of Thomas Hull at Western New England University. (Received September 23, 2012)