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Title: *The mathematics of origami*

Abstract: *Origami* is the Japanese art of paper folding used long ago to represent deities in a simple and abstract form. Currently origami is undergoing a radical shift, increasingly borrowing concepts and contributing to mathematics. A *crease pattern* is a diagram transposed onto an unfolded piece of paper indicating where the paper should be folded. Given an appropriate crease pattern, we may follow the diagram to fold the paper into what is commonly called a *base*, a general form through which a family of structurally related models can be folded. Utilizing properties of trees, we will map a projection of a desired base to an analogous tree and prove what is commonly called the Fundamental Theorem of the Tree Method of Design. Then, for any uniaxial base, we are guaranteed the existence of a crease pattern that, when folded, will result in our desired base.