CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, March 1
3:00 – 4:00 PM
Maria Sanford, Room 101

THE PLEAT PATTERN APPROACH TO ORIGAMI DESIGN

BENJAMIN PARKER

Abstract: In geometric origami, twists are of particular interest due to their dynamic nature. Which twists are possible with a sheet of paper is determined by the pleats that create them. While most researchers seek to understand the twists themselves, we focus on a method of describing molecules, by analyzing them in sets with respect to other sets.

We introduce a system of notating pleats on a hexagonal grid to describe their shape and location, calling the intersections of the pleats molecules. From there we will identify operations that can be applied to the molecules to see how the notation changes to accommodate. While not yet proven, many of the operations may act as automorphisms. Some may even generate groups.

We will present a flexible, intuitive, and robust framework for geometric origami design. We hope to provide some mathematical structure through the use of Algebra in the hopes that we can develop proofs for finite and infinite iterations of this system. It is our hope that other mathematicians and origami enthusiasts will build on our research and, through it, gain a deeper understanding of pleat intersections and the twists they create.

For further information:
gotchevi@ccsu.edu 860-832-2839
http://www.math.ccsu.edu/gotchev/colloquium/