

1116-AC-2716      **Kathryn Nyman\*** (knyman@willamette.edu), **Francis Su**, **Yan Zhang**, **Amanda Ruiz** and  
**Roberto Barrera**. *Envy-free divisions of continuous and discrete cakes*. Preliminary report.

A strong notion of a “fair division” of a cake is an envy-free division; one in which every player believes that their share is at least as good as any other share. We look at several cake-cutting questions in which we seek an envy-free solution, including the division of multiple cakes (in which players’ preferences of the piece they receive from one cake depends on the piece they received in the other), and the division of a discrete cake (or “string of beads”). Sperner’s Lemma, a combinatorial analogue of the Brouwer Fixed Point Theorem, plays a delightful role in the solution of several of these problems. (Received September 22, 2015)