



# Special Colloquium

**DR. CATHERINE PFAFF**

**UC SANTA BARBARA**

## **"THE OUTER AUTOMORPHISM GROUP OF THE FREE GROUP UNDERSTOOD THROUGH TOPOLOGY, GEOMETRY, AND DYNAMICS"**

The power of geometric group theory stems from our ability to understand groups as symmetries of objects. A classical example motivating my particular work is the group  $SL(2, \mathbb{Z})$  acting by isometries on the hyperbolic plane. Inspiration from this action has already extensively been used to understand mapping class groups (homeomorphisms of surfaces) via their action on Teichmueller space (the space of metrics on a surface). The outer automorphism group of the free group is the isometry group of Culler-Vogtmann Outer Space, a space that both strongly resembles and intricately differs from these more extensively studied spaces. I present in this talk several results demonstrating how we can use similarities between Outer Space and these other spaces to better understand the outer automorphism group of the free group. This is joint work with Yael Algom-Kfir, Ilya Kapovich, and Lee Mosher.

**Monday, March 13th, 2017**

**Room 284, the 2nd Floor of the Surge Building**

**Tea Time @ 3:40 p.m.**

**Talk Begins @ 4:10 p.m.**

**Ends @ 5:00 p.m.**

**UCR**

**Mathematics**

**Department**

**900 University Avenue  
Surge Building 2nd  
Floor  
Riverside, CA  
92521  
951-827-3113**



**Department of  
Mathematics**