

*Department of Mathematics,  
University of California San Diego*

\*\*\*\*\*

## Math 292 - Topology Seminar

**Dr. David Baraglia**

University of Adelaide

### Non-trivial smooth families of K3 surfaces

**Abstract:**

Let  $X$  be a compact, smooth manifold and  $\text{Diff}(X)$  the diffeomorphism group. The topology of  $\text{Diff}(X)$  and of the classifying space  $\text{BDiff}(X)$  are of great interest. For instance, the  $k$ -th homotopy group of  $\text{BDiff}(X)$  corresponds to smooth families over the  $k$ -sphere with fibres diffeomorphic to  $X$ . By a recent result of Bustamante, Krannich and Kupers, if  $X$  has even dimension not equal to 4 and finite fundamental group, then the homotopy groups of  $\text{BDiff}(X)$  are all finitely generated. In contrast we will show that when  $X$  is a K3 surface, the second homotopy group of  $\text{BDiff}(X)$  contains a free abelian group of countably infinite rank as a direct summand. Our families are constructed using the moduli space of Einstein metrics on K3. Their non-triviality is detected using families Seiberg–Witten invariants.

Host: Jianfeng Lin

**Wednesday, May 5, 2021**

**4:00 PM**

**Zoom Meeting ID: 933 6734 4286 Password:**

**topology**

\*\*\*\*\*