Department of Mathematics and Statistics Colloquium

Donaldson's Diagonalizability Theorem

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Abstract: In 1983, Donaldson proved a striking theorem giving restrictions on the intersection form of a simply connected smooth 4-manifold. Together with results of Freedman, this implies the rather surprising existence of many topological 4-manifolds that do not admit smooth structures.

I will explain the ideas of its original and beautiful proof, which involves studying a space of solutions to a certain PDE (up to equivalence) that I will introduce: the self-dual instanton equation. These are generalizations of Maxwell's equations.

Monday, September 27th at 3:10 pm via Zoom