

Speaker: Bob Gompf
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Title: Stein surfaces and exotic smooth structures

Abstract:

Stein surfaces can be used to study exotic smooth structures on open 4-manifolds. We will see how to construct infinite families of smoothings of various 4-manifolds, distinguished by minimal genus invariants. For example, if M is any closed, orientable 3-manifold with $b_2 > 0$, one can distinguish infinitely many diffeomorphism types of smoothings of $M \times \mathbb{R}$ by controlling minimal genera. Similarly, one can analyze 4-manifolds with product ends. For many splittings of closed 4-manifolds, such as normal connected sums, the splitting 3-manifold can be topologically isotoped into infinitely many different positions, distinguished by minimal genera in small neighborhoods.