

# Exotic 4-manifolds with small Euler characteristics

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It is known that many simply connected, smooth topological 4-manifolds admit infinitely many smooth structures. The smaller the Euler characteristic, the harder it is to construct exotic smooth structure.

In this talk we present new examples of symplectic 4-manifolds with same integral cohomology as  $S^2 \times S^2$ . We also discuss the generalization of these examples to  $\#_{2n-1}(S^2 \times S^2)$  for  $n > 1$ . As an application of these symplectic building blocks, we construct exotic smooth structure on small 4-manifolds such as  $\mathbb{C}P^2 \# k(-\mathbb{C}P^2)$  for  $k = 2, 3, 4, 5$  and  $3\mathbb{C}P^2 \# l(-\mathbb{C}P^2)$  for  $l = 4, 5, 6, 7$ . We will also discuss an interesting applications to the geography of minimal symplectic 4-manifolds.

Most of this is joint work with B. Doug Park.

1:00 p.m.  
Math 507  
Columbia University