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Smooth structures on contractible 4-manifolds

Joint work with Selman Akbulut. We show the existence of exotic smooth structures on contractible 4-manifolds. These structures are *absolute*, in the sense that they do not depend on a specific marking of the boundary. This is in contrast to the phenomenon of corks, which are exotic relative to an automorphism of their boundaries. The technique is to modify a relatively exotic manifold to give an exotic one with strong properties of the automorphism group of the boundary.