# Obstructing Pseudo-Convex Embeddings of Brieskorn Spheres in Complex 2-Space

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**Abstract**

A Stein manifold is a complex manifold with particularly nice convexity properties. In real dimensions above 4, existence of a Stein structure is essentially a homotopical question, but for 4-manifolds the situation is more subtle. An important question that has been circulating among contact and symplectic topologist for some time asks: whether every contractible smooth 4-manifold admits a Stein structure? In this talk we will provide examples that answer this question negatively. Moreover, along the way we will provide new evidence to a closely related conjecture of Gompf, which asserts that a nontrivial Brieskorn homology sphere, with either orientation, cannot be embedded in complex 2-space as the boundary of a Stein submanifold.