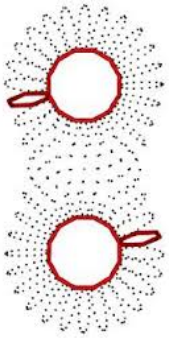
TEXAS STATE UNIVERSITY

The rising STAR *of Texas*



Texas State Topology Seminar

Thursday, 2018, October 25, 2:00-3:15 p.m., in DERR 227

Speaker: David Snyder

Topic: *A new technique for constructing rational non-integral homology 4-balls with homology sphere boundary*

ABSTRACT

We will discuss a recent paper of Akbulut and Larson. Fintushel and Stern showed that the Brieskorn sphere $\Sigma(2,3,7)$ bounds a rational homology 4-ball, while its non-trivial Rokhlin invariant obstructs it from bounding an integral homology ball. It is known that their argument can be modified to show that the figure-eight knot is rationally slice, and Akbulut and Solomon use this fact to provide the first *additional* examples of Brieskorn spheres that bound rational homology balls but not integral homology balls: the families $\Sigma(2, 4n+1, 12n+5)$ and $\Sigma(3, 3n+1, 12n+5)$ where n is odd. They also provide handlebody diagrams for a rational homology ball containing a rationally slice disk for the figure-eight knot, as well as for a rational homology ball bounded by $\Sigma(2, 3, 7)$. These handle diagrams necessarily contain 3-handles. Of necessity, we will briefly review the construction of the Brieskorn family of homology spheres.

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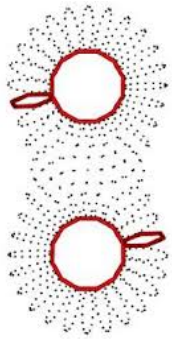

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