



Texas State Topology Seminar

Speaker: Isaiah Silaski

Topic: *On Smale's Conjecture fails in dimension 4*

Date: *Friday, 2019, February 15, 11:00-11:50 a.m., in DERR 333*

ABSTRACT

Watanabe recently posted on arxiv.org a paper which constructs exotic (nontrivial) elements of the rational homotopy groups of $\text{Diff}(S^4)$, the group of smooth self-diffeomorphisms of the 4-sphere. The first 12 pages of this paper will be presented and discussed over the next two seminar sessions. Watanabe presents a method he claims proves that there are many 'exotic' non-trivial elements in $\pi \cdot \text{Diff}(S^4) \otimes \mathbb{Q}$ parametrized by trivalent graphs. The proof utilizes Kontsevich's characteristic classes for smooth disk bundles and a version of clasper surgery for families. In fact, these are analogues of Chern–Simons perturbation theory in 3-dimensions and clasper theory due to Goussarov and Habiro.