

# COLLOQUIUM

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## REALIZATIONS OF SIMPLE SMALE FLOWS USING N-BAND TEMPLATES (N=3, 4)

### [ABSTRACT]

A simple Smale flow is a structurally stable flow which has one dimensional chain recurrent (invariant) set. When the flow has hyperbolic structure on its chain recurrent set, the chain recurrent set can be decomposed into finite number of basic sets which are disjoint, compact and have a dense orbit. Each basic set is either an attractor, a repeller or a saddle set. For the simple Smale flows on 3- manifolds, the attracting and repelling basic sets are single closed orbits and the saddle sets are single closed orbits or of chaotic nature. A chaotic saddle set can be modeled by a branched manifold called a template and the knot types of the periodic orbits can be studied within a template.

In the talk, we will mainly focus on the linking structure of attracting and repelling orbits using templates and discuss all possible realizations of the flow using 3-band and 4-band template models. This extends the work done by Prof. Michael Sullivan on the realization of Lorenz Smale flow and continues the work of Elizabeth Haynes on realizing simple Smale flow with a four band template on 3- sphere.