TEXAS ★ STATE

UNIVERSITY

The rising STAR *of Texas*

Differential Equations and Applied Math Seminar

Kyle Wianecki, Texas State University

11am-12pm February 5th, 2021

Zoom

Title: Formalization of Ordinary Differential Equations in PVS

Abstract: My internship at NASA Langley was focused on the formalization of the theory of ODE's. Such theories are written, formalized and verified within the Prototype Verification System (PVS). Topics included but were not limited to: semi-algebraic sets, higher order differential equations, existence and uniqueness of solutions, reduction of higher order differential equations to a system of first order differential equations, polynomial ODE's, analytic functions, and analytic solutions to polynomial ODE's.

The paper this internship project is replicating in PVS is "Computing Semi-algebraic Invariants for Polynomial Dynamical Systems" By Liu, Zhan, and Zhao.

Interested faculty and graduate students are encouraged to attend.