

**Title:**

Boundaries of a basin of attraction of a map related to the secant method

**Abstract:**

We consider a map obtained truncating the third iterate of the secant method applied to a polynomial near a 3-cycle. We describe the basin of attraction of the 3-cycle depending on an entire parameter depending on the degree of the polynomial. We prove that its boundary contains invariant manifolds of a the 3-cycle or of a 6-cycle, depending on the parity of the discrete parameter. The study requires global properties of the mentioned manifolds. When the parameter is odd we prove an intersection of the stable and unstable manifolds which provides the existence of many periodic orbits.

This is joint work with Toni Garijo and Xavier Jarque.