

# Operator Theory and Analytic Function Spaces

Polynomial lemniscates and their fingerprints: from analysis to topology

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Our main objects of study are shapes given by polynomial lemniscates, and their fingerprints. After giving some simple relations between analytic properties of shapes and fingerprints, we focus on the inflection points of fingerprints, their number and geometric meaning. Furthermore, we study dynamics of zeros of lemniscate-generic polynomials and their explosion that occur by planting singularities at certain moment, and then performing their versal deformation by a braid group. We call this dynamics polynomial fireworks and show that it is realized by construction of a braid operad.

This is joint work with Dmitry Khavinson (Tampa).