## Self-inversive polynomial and quasi-orthogonality on the unit circle Kiran Kumar Behera

Quasi-orthogonal polynomials are a class of polynomials whose zeros are used as nodes to develop quadrature formulas on the real line. They are defined in terms of orthogonal polynomials on the real line (like Legendre, Hermite, Chebyshev and others). A straightforward generalization of the definition of quasi-orthogonality to the unit circle is not valid since only Bernstein-Szegő polynomials satisfy such a definition. There have been attempts to modify the definition, but still they are not able to capture few properties that exist in case of the real line.

In this talk, we will discuss a concept of quasi-orthogonality based on the structural and orthogonal properties of a class of self-inversive polynomials. These polynomials have zeros only on the unit circle and the class is characterized by the property that its members satisfy a three term recurrence relation. We will also present a representation of these quasi-orthogonal polynomials in terms of reversed Szegő polynomials.

The results are partly motivated by the fact that recently cases have been made to establish, as the unit circle analogue of quasi-orthogonal polynomials on the real line, the class of polynomials that satisfy symmetric orthogonal conditions.