

On Legendre Multiplier Sequences

Abstract: As part of a program of understanding stability preserving operators, various, well understood polynomial bases serve as starting points for our ongoing investigations. In this talk we discuss multiplier sequences for the Legendre polynomials. These sequences can be viewed as linear operators which preserve the reality of zeros of a given polynomial (when expanded in the Legendre basis). We characterize linear, quadratic and geometric Legendre multiplier sequences, and discuss some interesting phenomena occurring with these polynomials that we haven't seen in the literature before. This is joint work with 3 students: K. Blakeman (LMU), E. Davis (BYU) and K. Urabe (Fresno State).