CoE-MaSS weekly seminar series

THE DST-NRF CENTRE OF EXCELLENCE IN MATHEMATICAL AND STATISTICAL SCIENCES (CoE-MaSS) PRESENTS A SEMINAR BY

Prof Kathy Driver

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"Zeros of Ultraspherical and Pseudo-Ultraspherical Polynomials"

Friday, 27 July 2018; 10h30-11h30
CoE-MaSS Seminar Room, 1st floor,
Math Sci Bldg, West Campus, Wits Univ.

The pseudo-ultraspherical polynomial of degree n is defined by $\tilde{C}_n^{(\lambda)}(x) = (-i)^n C_n^{(\lambda)}(ix)$ where $C_n^{(\lambda)}$ is the ultraspherical polynomial. We discuss the orthogonality of finite sequences of pseudo-ultraspherical polynomials $\{\tilde{C}_n^{(\lambda)}(x)\}_{n=0}^{N}$ for different values of N that depend on λ. We discuss applications of Wendroff's Theorem and use an identify linking the zeros of the pseudo-ultraspherical polynomial $\tilde{C}_n^{(\lambda)}$ with the zeros of the ultraspherical polynomial $C_n^{(\lambda')}$ where $\lambda' = \frac{1}{2} - \lambda - n$ to prove that when $1 - n < \lambda < 2 - n$, two (symmetric) zeros of $\tilde{C}_n^{(\lambda)}$ lie on the imaginary axis.

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