

Recurrence equations involving different orthogonal polynomial sequences

12.06**Aletta Jooste***(University of Pretoria, South Africa)***Time:** Wednesday 24.07., 10:30 - 11:00, Room SH 02

Abstract: Every sequence of real polynomials $\{p_n\}_{n=0}^{\infty}$, orthogonal with respect to a positive weight function $w(x)$ on the interval (a, b) , satisfies a three-term recurrence equation. We discuss the role played by the polynomials associated to p_n , especially as coefficient polynomials in the three-term recurrence equation involving polynomials p_n, p_{n-1} and $p_{n-m}, m \in \{2, 3, \dots, n-1\}$. Furthermore, we show how Christoffel's formula is used to obtain mixed three-term recurrence equations involving the polynomials p_n, p_{n-1} and $g_{n-m,k}, m \in \{2, 3, \dots, n-1\}$, where the sequence $\{g_{n,k}\}_{n=0}^{\infty}, k \in \mathbb{N}_0$, is orthogonal with respect to $c_k(x)w(x) > 0$ on (a, b) and c_k is a polynomial of degree k in x . The equations obtained can be used to study the location of the zeros of the appropriate polynomials.