

DEPARTMENT OF MATHEMATICS  
2016 SPRING SEMINAR

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***“Zero distribution of sequences of polynomials”***

Abstract:

We discuss a method which shows that the zeros of various sequences of polynomials lie on fixed curves on the complex plane. For example, given any natural number  $n \geq 2$  and two polynomials  $A(z)$  and  $B(z)$  with complex coefficients, we form a sequence of polynomials  $P_m(z)$  defined recursively by a three-term recurrence of degree  $n$ :  $P_m(z) + B(z)P_{m-1}(z) + A(z)P_{m-n}(z) = 0$ . With an appropriate initial condition, the zeros of  $P_m(z)$  will all lie on an explicit fixed curve for all large  $m$ . The method also extends to various recurrences that have more than three terms. Besides polynomials with a finite recurrence, we can apply this method to polynomials obtained from linear transformations of polynomials whose zeros lie on a ray or a sector of the complex plane.

**Friday, February 26, 2016**  
**PB 138**  
**12:00PM – 1:00PM**