

BOSTON UNIVERSITY NUMBER THEORY SEMINAR

Chebyshev polynomials and formal groups

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Monday, Feb. 25 at 4:15 pm
111 Cummington Street, MCS B21
Tea and cookies in MCS 144 at 3:45 pm

Abstract: The Chebyshev polynomials T_n , characterized by $x^n + 1/x^n = T_n(x + 1/x)$, commute with each other under composition since $T_m(T_n(x)) = T_{mn}(x) = T_n(T_m(x))$. Aside from the power functions x^n , the Chebyshev polynomials are essentially the only sequence of polynomials, one of each degree, that commute with each other. A natural source of families of commuting formal power series is formal groups, and Myoungil Kim asked if there is an explanation of the special role of Chebyshev polynomials as a commuting family of polynomials using formal groups. We will answer his question.