ANALYSIS SEMINAR

AN ASYMPTOTIC FORMULA

FOR THE TAYLOR SERIES COEFFICIENTS

OF FUNCTIONS WITH

ALGEBRAIC SINGULARITIES

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Thursday November 11, 2010 at 8:00 am in Hume 321

Abstract: *We present a known result of an asymptotic formula for the coefficients of the Taylor series expansion of functions under certain conditions. Our results show that knowing the location of algebraic singularities of a function can tell us a great deal about the asymptotic behavior of the coefficients of its power series. We then introduce a class of orthogonal polynomials, known as the ultraspherical or Gegenbauer polynomials (of which the Legendre polynomials are a special case), and use our results to find an asymptotic formula for these polynomials for all points in the complex plane.*