

McKay-Thompson series and high level approximations for π

Timothy Huber

(The University of Texas Rio Grande Valley)

Abstract

We systematize the construction of Ramanujan-Sato series involving expansions for modular forms in terms of McKay-Thompson series. This work extends lower level results, with level 17 as a prototype. We demonstrate an explicit construction of the differential equations in the general case; discuss how to optimize the recursion defining the series coefficients; and relate an algorithm for finding all singular values of the Hauptmoduln within the radius of convergence via the construction of explicit modular equations.