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Wai Ling Yee* (wlyee@uwindsor.ca), Mathematics and Statistics, Lambton Tower, 10th floor, University of Windsor, Windsor, Ontario N9B3P4, Canada. *Signatures of invariant Hermitian forms on irreducible highest weight modules and signed Kazhdan-Lusztig polynomials.*

Perhaps the most important problem in representation theory in the 1970s and early 1980s was the determination of the multiplicity of composition factors in a Verma module. This problem was settled by the proof of the Kazhdan-Lusztig Conjecture which states that the multiplicities may be computed via Kazhdan-Lusztig polynomials. We introduce signed Kazhdan-Lusztig polynomials, a variation of Kazhdan-Lusztig polynomials which encodes signature information in addition to composition factor multiplicities and Jantzen filtration level. Careful consideration of Gabber and Joseph's proof of Kazhdan and Lusztig's recursive formula for computing Kazhdan-Lusztig polynomials and an application of Jantzen's determinant formula lead to a recursive formula for the signed Kazhdan-Lusztig polynomials. We use these polynomials to compute the signature of an invariant Hermitian form on an irreducible highest weight module. Such a formula has applications to unitarity testing. (Received September 26, 2006)