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**JULIA GORDON**, University of British Columbia

*Explicit improvement on Harish-Chandra's integrability exponent*

It is a well-known result of Harish-Chandra that most invariant distributions on real and  $p$ -adic reductive groups (e.g., Fourier transforms of orbital integrals, and characters of representations) are represented by locally integrable functions on the group, and the singularities of these functions are 'smoothed' by the zeroes of the Weyl discriminant. In the recent joint work with Itay Glazer and Yotam Hendel, we analyze the singularities of the inverse of the Weyl discriminant, and from that, obtain an explicit improvement on the integrability exponent of the Fourier transforms of nilpotent orbital integrals, and consequently, of characters. I will discuss this improvement and some surprising applications, e.g., to word maps.