Double descent for classical groups

We consider the generalized doubling integrals of Cai, Friedberg, Ginzburg and Kaplan. These generalize the doubling method of Piatetski-Shapiro and Rallis and represent the standard L-function for pairs of irreducible, automorphic, cuspidal representations \( \pi \) - on a (split) classical group \( G \), and \( \tau \) - on \( GL(n) \). The representation \( \pi \) need not have any particular model (such as a Whittaker model, or a Bessel model). These integrals suggest an explicit descent map (an inverse to Langlands functorial lift) from \( GL(n) \) to \( G(\text{appropriate } G) \). I will show that a certain Fourier coefficient applied to a residual Eisenstein series, induced from a Speh representation, corresponding to a self-dual \( \tau \), is equal to the direct sum of irreducible cuspidal representations \( \sigma \otimes \sigma' \), on \( G \times G \), where \( \sigma \) runs over all irreducible cuspidal representations, which lift to \( \tau \) (\( \sigma' \) is the complex conjugate of an outer conjugation of \( \sigma \)). This is a joint work with David Ginzburg.

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