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**Daniel Bump\*** ([bump@math.stanford.edu](mailto:bump@math.stanford.edu)), Department of Mathematics, Stanford Building 380, Stanford, CA 95305-2125. *From Whittaker functions to Quantum Groups.*

This talk has connections with both number theory and mathematical physics. *Weyl group multiple Dirichlet series*, whose coefficients involve Gauss sums and whose groups of functional equations are Weyl groups have applications in number theory. They can be studied as Whittaker functions of Eisenstein series on metaplectic groups. We will focus on the Whittaker functions on the  $n$ -fold metaplectic covers of  $GL(r)$  over a  $p$ -adic field. These have remarkable properties that can be proved using difficult combinatorial arguments but which suggest a connection with quantum groups. To investigate the implications of this we will focus on the Whittaker functions on the  $n$ -fold metaplectic covers of  $GL(r)$  over a  $p$ -adic field. In 2012, Brubaker, Bump, Friedberg, Chinta and Gunnells showed that these Whittaker functions could be expressed as partition functions of statistical mechanical systems similar to the well-known 6-vertex or ice-type models. Recently Buciumas, Brubaker and Bump found a Yang-Baxter equation for this "metaplectic ice" and related it to the known R-matrix of the quantum affine Lie superalgebra  $\mathfrak{gl}(n|1)$ . (Received February 10, 2016)