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**Ben Brubaker\*** (brubaker@math.mit.edu), 2-267 MIT, 77 Massachusetts Ave., Cambridge, MA 02139, and **Daniel Bump** and **Solomon Friedberg**. *Connections between automorphic forms, representations, and statistical mechanics.*

We'll present a collection of deformations of characters for highest weight representations using statistical mechanical models. These have applications to automorphic forms, as can be seen by the Casselman-Shalika formula which expresses local Whittaker functions in terms of characters on the Langlands dual group. A key feature of this new approach is that functional equations for automorphic forms can be demonstrated via certain instances of the Yang-Baxter equation. This is principally joint work with Friedberg and Bump, and will also touch on joint work with Chinta and Gunnells, and thesis work by my Ph.D. student Sawyer Tabony. (Received August 17, 2010)