1073-82-3   **Benjamin B. Brubaker*** (`brubaker@math.mit.edu`), Department of Mathematics,
Massachusetts Institute of Technology, Cambridge, MA 02139. *Square ice, symmetric functions,
and their connections to automorphic forms.*

We will discuss an example of a two-dimensional lattice model called square ice, which has an elementary combinatorial description. This model will be used to generate Schur polynomials, a particularly nice class of symmetric functions. We explain how to prove that functions on square ice are symmetric using a beautiful technique of Rodney Baxter based on the Yang-Baxter equation.

Finally, we discuss the connection between Schur polynomials, ice models, and automorphic forms. In brief, the Fourier coefficients of certain automorphic forms (known as Eisenstein series) on the general linear group are expressible as Schur polynomials. At the conclusion, we'll speculate about the wider use of statistical models in studying automorphic forms.

No assumptions on previous acquaintance with any of the above topics will be made in the talk, and a large portion should be accessible to a wide audience including undergraduates. This is based on joint work with Daniel Bump and Solomon Friedberg. (Received July 29, 2011)