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**Francesco Cellarosi\*** ([fcellaro@math.princeton.edu](mailto:fcellaro@math.princeton.edu)), Department of Mathematics - Fine Hall, Princeton University, Washington Road, PRINCETON, NJ 08544-0001. *On the Möbius function and Statistical Mechanics.*

I will present a recent joint work with Ya.G. Sinai. We investigate the “randomness” of the classical Möbius function by means of a statistical mechanical model for square-free numbers and we prove some new results, including a non-standard limit theorem. This work is inspired by a conjecture by P. Sarnak, and by a number of recent results relating Number Theory and Ergodic Theory. (Received February 12, 2011)