

Orderings of the rationals: dynamical systems and statistical mechanics

After recalling the basic properties of the Stern-Brocot tree and its connection with continued fractions, we show that (a permuted version of) it can be constructed dynamically in two different ways, which in turn are related to the geodesic and horocycle flows on the modular surface, respectively. We then briefly discuss some further connections with the spectral theory of the hyperbolic Laplacian, the statistical mechanics of a class of ferromagnetic spin chains and some stochastic processes on the positive real line.