1100-82-292 **Carl P Dettmann*** (carl.dettmann@bris.ac.uk) and **Edson D Leonel**. *Infinite horizon Lorentz gases with static or pulsating scatterers.*

The Lorentz gas consists of a point particle colliding with an extended array of hard obstacles. It has been studied widely in statistical mechanics and ergodic theory as a deterministic diffusion process. Recent interest has focused on the infinite horizon case, where the scatterers are periodic and it is possible (but of zero measure) for the particle to avoid any collisions. In the two-dimensional static case this leads to logarithmic superdiffusion, and anomalous convergence of the second moment to twice the variance of the limiting normal distribution. Higher dimensions lead to a number of interesting variations. When the scatterers have a time-periodic radius, collisions typically increase the average velocity of the particle. In this case heuristic arguments and numerical simulations show that the infinite horizon enhances the acceleration, despite longer periods without collisions. (Received February 10, 2014)