

1131-37-136

Meagan Carney and **Matthew Nicol***, Department of Mathematics, 3551 Cullen Blvd., Houston, TX 77204, and **Hongkun Zhang**. *The Compound Poisson law for hitting times to periodic orbits in two-dimensional hyperbolic systems*. Preliminary report.

We show that a compound Poisson distribution holds for scaled exceedances of observables ϕ uniquely maximized at a periodic point ζ in a variety of two-dimensional hyperbolic dynamical systems with singularities (M, T, μ) , including the billiard maps of Sinai dispersing billiards in both the finite and infinite horizon case. The observable we consider is of form $\phi(z) = -\ln d(z, \zeta)$ where d is a metric defined in terms of the stable and unstable foliation. The compound Poisson process we obtain is a Pólya-Aeppli distribution of index θ . We calculate θ in terms of the derivative of the map T . These results generalize to a broader class of functions maximized at ζ , though the formulas regarding the parameters in the distribution need to be modified. (Received July 11, 2017)