1145-53-2324 **Matthew A Morena*** (matthew.morena@cnu.edu). *Predictability Heat Maps of Chaotic Attractors.*

We present a new method for identifying the regions on a chaotic attractor that are locally more stable and hence potentially more predictable than other regions. To do this, we construct a local reference frame at each point along a fiducial trajectory that takes into account the local separation rates of nearby trajectories. Thus, in each neighborhood of a chaotic attractor, we construct an independent coordinate system in which one axis is aligned with the local flow direction and each remaining axis aligns with the remaining dynamical directions. This moving reference frame evolves along a given trajectory, but is independent in the sense that its axes are determined by the attractor's local dynamical geometry and not by parametric properties of the trajectory itself. The novelty of our technique lies in its ability to consider the local dynamics of chaotic systems, while being robust to both noise and to any nonlinearities in the governing equations. All of this allows for a predictability heat maps of entire attractors to be generated, where "hot" regions correspond to relatively high separation rates, and hence to lower predictability, and conversely for the "cold" regions and lower separation rates. (Received September 25, 2018)