Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Quantifying the group specificity of animal vocalizations through relative entropies SARAH HALLERBERG, Hamburg University of Applied Science, MARC TIMME, Network Dynamics, Max Planck Institute for Dynamics and Self-Organization, KURT HAMMERSCHMIDT, Cognitive Ethology Lab, German Primate Center, HEIKE VESTER, Network Dynamics, Max Planck Institute for Dynamics and Self-Organization — Recordings of animal vocalization can lack of important information about sender and context, in particular in the increasing number of bio-acoustic monitorings and in studies on marine mammals. Here, we develop a framework to estimate group specificity without specific sender information. We introduce and apply the bag-of-calls-and-coefficients approach (BOCCA) to study ensembles of cepstral coefficients composed from vocalization signals recorded from a given animal group. Comparing distributions of such ensembles of coefficients by computing relative entropies reveals group specific differences. We illustrate the ensemble-based method by showing that differences of ensembles of calls within social groups of pilot whales (Globicephala melas) are significantly lower than intergroup differences.

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Date submitted: 11 Nov 2016 Electronic form version 1.4