1089-37-130 **Christian Wolf*** (cwolf@ccny.cuny.edu), Department of Mathematics, New York, NY 10031, and **Tamara Kucherenko**, Department of Mathematics, New York, NY 10031. *On rotation entropy.*

For a continuous map f on a compact metric space we study the entropy of the generalized rotation set $R(\Phi)$. Here $\Phi = (\phi_1, ..., \phi_m)$ is a m-dimensional continuous potential and $R(\Phi)$ is the set of all μ-integrals of Φ and μ runs over all f-invariant probability measures. We study the relation between $R(\Phi)$ and the set of all statistical limits $R_{Pt}(\Phi)$. It turns out that in general these sets differ but under certain conditions $R(\Phi) = R_{Pt}(\Phi)$. Next we consider the entropy function $w \mapsto H(w), w \in R(\Phi)$. We establish a variational principle for the entropy function and show that for certain non-uniformly hyperbolic systems $H(w)$ is determined by the growth rate of those hyperbolic periodic orbits whose Φ-integrals are close to w. Moreover, discuss regularity properties of the entropy function. (Received February 17, 2013)