ENTROPY ON QUASI-METRIC SPACES

Paulus Haihambo 1,2* and Olivier Olela Otafudu¹

 ¹ School of Mathematical and Statistical Sciences North-West University, Potchefstroom Campus, Potchefstroom 2520, South Africa
e-mail: kashitoma@yahoo.com, olivier.olelaotafudu@nwu.ac.za
² Department of Mathematics, University of Namibia
e-mail: phaihambo@unam.na

Quasi-uniform entropy $h_{QU}(\psi)$ is defined for a uniformly continuous selfmap ψ on a quasi-metric space (X, q). Basic properties are proved about this entropy, and it is shown that the quasi-uniform entropy $h_{QU}(\psi, q)$ is less or equal to the Bowen's uniform entropy $h_U(\psi, q^s)$ of ψ considered as a uniformly continuous self-map of the metric space (X, q^s) , where q^s is the symmetrised metric of the quasi-metric q. Finally, we prove that the completion theorem for quasi-uniform entropy holds in the class of all join-compact quasi-metric spaces.

References

- O. Olela Otafudu, P. Haihambo, On entropy on quasi-metric spaces, Topology Appl.(Under review).
- [2] R.L. Adler, A. G. Konheim, and M. H. McAndrew, Topological entropy, Trans. Amer. Math. 114 (1965) 309–319.
- [3] R. Bowen, Entropy for group endomorphisms and homogeneous spaces, Trans. Amer. Math. Soc. 153 (1971) 401–414.
- [4] S. Cobzas, Functional analysis in Asymmetric Normed spaces, Frontiers in Mathematics, Springers, Basel. (2013).
- [5] E. I. Dinaburg, The relation between topological entropy and metric entropy, Soviet Math. Dokl. 11 (1970), 1316.
- [6] T. Kimura, Completion theorem for uniform entropy. Comment. Math. Univ. Carolin. 39 (1998) 389399.
- [7] J.E. Hofer, Topological entropy for non-compact spaces, Michigan J. Math. 21 (1974) 235–242.
- [8] P. Walters, An Introduction to Ergodic Theory, Springer-Verlag, New-York. (1982).
- [9] H.-P.A. Künzi, An introduction to quasi-uniform spaces, Contemp. Math. 486 (2009) 239–304.

[10] Y. Sayyari, M. Molaei and S.M. Moghayer, Entropy of continuous maps on quasi-metric spaces. J. Adv. Res. Dyn. Control Syst. 7 (2015) 1-10.