Title: Topological Entropy of Locally Compact Groups

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Abstract: In a locally compact group G, it is possible to consider the family of all compact neighborhoods of the identity $\mathcal{C}(G)$ in G, and if μ is a left Haar measure on G, $U \in \mathcal{C}(G)$ and n positive integer, it is possible to consider the *n-th ϕ-cotrajectory of U*

$$C_n(\phi, U) = U \cap \phi^{-1}(U) \cap \ldots \cap \phi^{-n+1}(U) \in \mathcal{C}(G).$$

The *topological entropy* of ϕ with respect to $U \in \mathcal{C}(G)$ is

$$H_{top}(\phi, U) = \limsup_{n\to\infty} \frac{-\log \mu(C_n(\phi, U))}{n}$$

and the *topological entropy* of ϕ is

$$h_{top}(\phi) = \sup\{H_{top}(\phi, U) \mid U \in \mathcal{C}(G)\}.$$

Denoting by $\mathrm{End}(G)$ the ring of continuous endomorphisms of G, we may also introduce the *topological entropy of G* as

$$\mathbf{E}_{top}(G) = \{h_{top}(\phi) \mid \phi \in \mathrm{End}(G)\},$$

and investigate locally compact groups in

$$\mathfrak{E}_{<\infty} = \{G \mid \mathbf{E}_{\mathsf{top}}(G) = [0, +\infty)\}.$$

Locally compact groups with finite topological entropy are exactly those in $\mathfrak{E}_{<\infty}$.

In the present talk I will illustrate structural properties of locally compact groups in $\mathfrak{E}_{<\infty}$ and some recent results, which are inspired by [1, 2, 3].

References

[1] R.L. Adler, A.G. Konheim and M.H. McAndrew, *Topological entropy*, Trans. Amer. Math. Soc. 114 (1965) 309–319.

[2] B. M. Hood, Topological entropy and uniform spaces, *J. London Math. Soc.* **8** (1974), 633—641.

[3] D. A. Lind and T. Ward, Automorphisms of solenoids and p-adic entropy, *Ergod. Theory Dyn. Syst.* **8** (1988), 411–419.