REPRESENTATION OF MEASURABLE FLOWS BY LIPSCHITZ FUNCTIONS

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Abstract. The remarkable Jewett-Krieger theorem states that every ergodic measure preserving $\mathbb{Z}$-system is isomorphic to a strictly ergodic system. Jacobs developed an analogous result for weakly mixing $\mathbb{R}$-flows. Denker and Eberlein strengthened this result by replacing weakly mixing with ergodicity, based on a representation theorem due to Eberlein stating that $(\mathrm{Lip}_1(\mathbb{R}), \mathrm{shift})$ is a topological model for every aperiodic measurable $\mathbb{R}$-flow, where $\mathrm{Lip}_1(\mathbb{R})$ denotes the space of functions $f : \mathbb{R} \to [0, 1]$ which are 1-Lipschitz.

In this talk, I will give a new proof of Eberlein's result using the Ambrose-Kakutani representation theorem and a recent Lipschitz refinement of Beboutov-Kakutani embedding theorem due to Gutman, Jin and Tsukamoto. The method generalizes to free, ergodic, measurable $\mathbb{R}^n$-flows, giving a new multi-dimensional generalization of Eberlein's representation theorem.

The talk is based on joint work with my PhD thesis co-advisor Yonatan Gutman (IM PAN).

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