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An explicit compact universal space for real flows. (English) Zbl 1407.37028

Summary: The Kakutani-Bebutov Theorem [S. Kakutani, J. Differ. Equations 4, 194–201 (1968; Zbl 0174.40101)] states that any compact metric real flow whose fixed point set is homeomorphic to a subset of \( \mathbb{R} \) embeds into the Bebutov flow, the \( \mathbb{R} \)-shift on \( C(\mathbb{R}, [0, 1]) \). An interesting fact is that this universal space is a function space. However, it is not compact, nor locally compact. We construct an explicit countable product of compact subspaces of the Bebutov flow which is a universal space for all compact metric real flows, with no restriction; namely, into which any compact metric real flow embeds. The result is compared to previously known universal spaces.

MSC:
37C10  Dynamics induced by flows and semiflows
37D40  Dynamical systems of geometric origin and hyperbolicity (geodesic and horocycle flows, etc.)
54H20  Topological dynamics (MSC2010)

Keywords:
Bebutov-Kakutani theorem; compact metric flow; Bebutov flow; Bernstein space; universal space; equivariant embedding

Full Text: DOI arXiv

References:

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