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The problem of inverse of flow

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This problem is particularly interesting for Kolmogorov systems. Namely is the inverse also K-system ?

In the case of discrete parameter, i.e. K-automorphism, it is known by the use of an entropical property and it is clear that Bernoulli shifts, a sub class of K-systems, are isomorphic to the inverses.

In [ ], Totoki defined the following class of flows of special type ;

Special flows constructed under

(i) a base automorphism is Bernoulli,

(ii) a ceiling function has values which depend on zero-th cordinate

of base Bernoulli shift
and showed that the flow is K-system if and only if the ceiling function has not lattice distribution. Ornstein showed that these flows are Bernoulli flows in [ ].

About this class, we can construct an isomorphism between the original one and the inverse and then the problem is solved.

But, morever, Ornstein proved that all the Bernoulli flows (normalized) are mutually isomorphic in [ ]. Then our problem has been answered in the affirmative and in an strong sense for Bernoulli flows.

We have never known the answer for K-systems in the case of continuous parameter but for K-automorphisms the isomorphy fails (see [ ]) contrary to Smordinsky's conjecture.

We report the circumstances using some simple examples.

References

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[4] D.S. Ornstein and P.C. Shields, An uncountable family of K-automorphisms, ibid.