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FUNCTIONS OF SMALL BOREL CLASSES

In this talk we present first return characterizations of functions of small Borel classes. These results are obtained jointly with Mike Evans and Richard O'Malley.

The reader may refer to [1], [2], and [3] for the relevant definitions.

Theorem 1 ([2]) *A function $f : [0, 1] \to \mathbb{R}$ is Darboux and of Baire class 1 if and only if f is first return continuous.*

Let $\mathcal{G}$ denote the collection of all Darboux, Baire 1 functions $f : [0, 1] \to \mathbb{R}$ for which $f|C(f)$ is dense in f. (Here, $C(f)$ denotes the set of points of continuity of f.) The following theorem characterizes class $\mathcal{G}$.

Theorem 2 ([3]) *A function $f : [0, 1] \to \mathbb{R}$ is universally first return continuous if and only if $f \in \mathcal{G}$.*

Theorem 3 ([1]) *Suppose X is a compact metric space and Y is a separable metric space. A function $f : X \to Y$ is first return recoverable iff f is of Baire class 1.*

References

[1] U. B. Darji and M. J. Evans, *Recovering Baire 1 functions*, Mathematika (to appear.)

[2] U. B. Darji, M. J. Evans, and R. J. O'Malley, *First return path systems: differentiability, continuity, and orderings*, Acta Math. Hungar. (to appear.)

[3] U. B. Darji, M. J. Evans, and R. J. O'Malley, *Universally first return continuous functions*, Proc. Amer. Math. Soc. (to appear.)