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(piotr.mikusinski@ucf.edu). *Transfunctions As Generalized Functions*. Preliminary report.

A transfunction is a function which maps between sets of finite measures on measurable spaces, defined by Mikusiński in 2015.

Push-forward operators form an important class of examples of transfunctions that can be identified with measurable functions. There are naturally arising transfunctions with nice properties which are not measurable functions. Transfunctions which are σ -weakly additive between separable metric spaces are of particular interest. We study such transfunctions which are localized: sending source measures carried by small open sets to target measures also carried by small open sets. We characterize transfunctions that correspond to continuous functions and measurable functions and we show that the behavior of localized transfunctions can be approximated spatially by measurable functions or even by continuous functions, but only up to some extent/error.

We are interested in applications of transfunctions to Monge-Kantorovich transport problems. In particular, we characterize transfunctions that correspond to transport plans with prescribed marginals. We also propose transfunctions as possible models for population dynamics. (Received February 08, 2018)