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"Asymmetric free spaces and canonical asymmetrizations"

A construction analogous to that of Godefroy-Kalton for metric spaces allows to embed isometrically, in a canonical way, every quasi-metric space (X,d) to an asymmetric normed space $\mathcal{F}_a(X,d)$, its semi-Lipschitz free space. The quasi-metric free space satisfies a universal property (linearization of semi-Lipschitz functions). The (conic) dual of $\mathcal{F}_a(X,d)$ coincides with the non-linear asymmetric dual of (X,d), that is, the space $\mathrm{SLip}_0(X,d)$ of semi-Lipschitz functions on (X,d), vanishing at a base point. If (X,D) is a metric space, the above construction yields its usual free space. Based on this construction, every metric space (X,D) inherits naturally a canonical asymmetrization coming from its free space $\mathcal{F}(X)$. This gives rise to a quasi-metric space (X,D_+) and an asymmetric free space $\mathcal{F}_a(X,D_+)$. The symmetrization of the latter is isomorphic to the original free space $\mathcal{F}(X)$.

The talk is based on the recent article :

A. Daniilidis, J.-M. Sepulcre, F. Venegas M.
Asymmetric free spaces and canonical asymmetrizations
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