

# THE SEMI-LIPSCHITZ FREE SPACE OF A QUASI-METRIC SPACE.

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ABSTRACT. In this work we present a generalization of Lipschitz free spaces to spaces allowing asymmetries on the distance function, known as quasi-metric spaces. Given a quasi-metric space  $(X, d)$ , and making use of the theory of normed cones and asymmetric normed spaces, we construct an asymmetric normed space  $\mathcal{F}_a(X, d)$ , which contains a canonic isometric copy of  $(X, d)$ , and such that its dual cone is isometrically isomorphic to  $\text{SLip}_0(X)$ , the cone of real valued semi-Lipschitz functions vanishing at a given base point. If the quasi-metric space is in fact a metric space, the usual Lipschitz free space is recovered. We also present examples of this construction for a finite quasi-metric space,  $\mathbb{N}$  and  $\mathbb{R}$  (endowed with suitable quasi-metrics).