

On continuity of functors between locally presentable categories

Giacomo Tendas

Masarykova Univerzita

We prove that for each locally finitely presentable category \mathcal{K} there exists a regular cardinal κ such that any finitary functor out of \mathcal{K} (into another locally finitely presentable category) is continuous if and only if it preserves κ -small limits; as a consequence we obtain a new adjoint functor theorem specific to the finitary functors out of \mathcal{K} .

While this is all very nice (and maybe unexpected), one might wonder whether there is any application of this result. I will present two: (1) this theorem allows us to characterize the dualizable modules over a commutative ring R using certain flatness conditions, and (2), generalizing this to the enriched setting, we deduce that a small \mathcal{V} -category is accessible if and only if it is Cauchy complete.