Factorization Systems on (Stable) Derivators

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(joint work with Fosco Loregian)

Abstract

After giving the definition of a triangulated factorization system on a given triangulated category, I will sketch an argument showing that a suitable subclass thereof (the triangulated-normal torsion theories) corresponds bijectively to t-structures on the same category.

This result will be then placed in the framework of derivators, regarding a triangulated category as the underlying category $D(1)$ of a stable derivator $D$. More generally, I will define derivator factorization systems in the 2-category $PDer$ of pre-derivators, and prove that a similar characterization still holds true: for a stable derivator $D$, a suitable subclass of the class of derivator torsion theories on $D$ (the normal derivator torsion theories) corresponds bijectively with t-structures on the underlying category $D(1)$.

These two result can be regarded as the triangulated- and derivator- analogues, respectively, of the theorem that says that ‘t-structures are normal torsion theories’ in the setting of stable $\infty$-categories, showing how the result remains true whatever the chosen model for stable homotopy theory is.

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