

Colimits

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Abstract

Extending Guitart's work of the 1970s, in this talk we eventually present the formation of the diagram category of a category and the formation of the Grothendieck category of a CAT-valued functor as adjoint 2-functors, and then establish a considerable generalization thereof. This generalization becomes part of a web of adjunctions which also involves the Grothendieck 2-equivalence for split (co)fibrations and indexed categories, at a level that allows for the 2-dimensional variation of the base categories. We start off, however, much more easily, with various observations on the effective computation of colimits and their decomposition into "pieces". A "twisted" Fubini-type decomposition theorem and various other facts on colimits are directly linked to the web of adjunctions that we gradually build. We pay particular attention on how to compute colimits in CAT. This talk draws from the following two papers: George Peschke and Walter Tholen: Diagrams, fibrations, and the decomposition of colimits. [arXiv:2006.10890 \[math CT\]](#) Paolo Perrone and Walter Tholen: Kan extensions are partial colimits. [arXiv:2101.04531 \[math CT\]](#)