

A MODEL 2-CATEGORY OF COMBINATORIAL MODEL CATEGORIES

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Model categories have been the most typical framework for categorical homotopy theory since their introduction 50 years ago. But the structure of the category of all model categories itself has remained relatively mysterious. The goal of this talk is to answer a relatively old question in the area: organizing 'combinatorial model categories' into a model categories. More precisely, we propose to construct a model 2-category, whose fibrant objects are the 'combinatorial model categories', with left Quillen functors between them, and weak equivalences being the Quillen equivalences. We will in fact construct several interconnected version of this model category. In the case of simplicial model categories one can even obtain a similar result but where furthermore every object is fibrant (so that one really has a model category structure on the category of combinatorial simplicial model category). Note that here 'model category' was used as a generic term for Quillen model category and various weakening of the notion (left semi-model category, weak model categories etc...), the precise statement will be detailed during the talk.