Awodey

Cartesian Cubical Model Categories

This book introduces the category of Cartesian cubical sets and endows it with a Quillen model structure using ideas coming from Homotopy type theory. In particular, recent constructions of cubical systems of univalent type theory are used to determine abstract homotopical semantics of type theory. The celebrated univalence axiom of Voevodsky plays a key role in establishing the basic laws of a model structure, showing that the homotopical interpretation of constructive type theory is not merely possible, but in a certain, precise sense also necessary for the validity of univalence. Fully rigorous proofs are given in diagrammatic style, using the language and methods of categorical logic and topos theory. The intended readers are researchers and graduate students in homotopy theory, type theory, and category theory.

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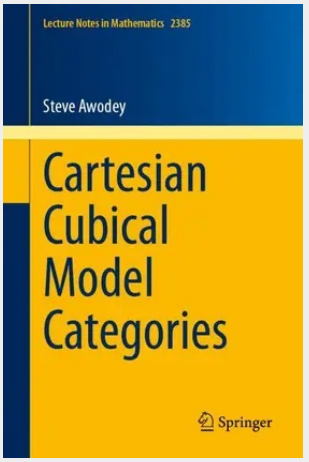

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