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EDITORIAL PREFACE

Special issue on homotopy type theory 2019 vol. 2

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This special issue collects papers on homotopy type theory and univalent foundations. This research area studies topics at the intersection of type theory, category theory, and homotopy theory. For example, homotopical and higher categorical ideas have led to new extensions of dependent type theory and new dependent type theories, and these type theories have been used in proof assistants to formalize mathematics. In August 2019, the *International Conference on Homotopy Type Theory (HoTT 2019)* was held in at Carnegie Mellon University, with scientific organization by Steve Awodey, Andrej Bauer, Thierry Coquand, Nicola Gambino, Peter LeFanu Lumsdaine, and Michael Shulman. This special issue of MSCS contains work presented at the HoTT 2019 conference and work on related topics.

This volume is the second of two volumes for this special issue. It contains the following papers:

On notions of compactness, object classifiers and weak Tarski universes by Raffael Stenzel. This paper closes a gap between the semantics of univalent universes and model-theoretic notions of object classifiers, showing that the interpretations of type-theoretic univalent universes also correspond to object classifiers in the sense of Lurie.

The long exact sequence of homotopy n-groups by Ulrik Buchholtz and Egbert Rijke. This paper defines a notion of homotopy n-group in type theory, generalizing the usual homotopy 1-groups of a type to represent n dimensions of information. The paper then shows that any fiber sequence of pointed types induces a long n-exact sequence of homotopy n-groups, generalizing a tool used in the calculation of homotopy 1-groups to n-groups.

Two-level type theory and applications by Danil Annenkov, Paolo Capriotti, Nicolai Kraus, and Christian Sattler. Building on Voevodsky's two-level type theory HTS, this paper studies a different formulation of two-level type theory with a key conservativity property for the inner of the two levels of types.

Monoidal weak omega-categories as models of a type theory by Thibaut Benjamin. Previous work by Brunerie developed a diagram calculus for globular weak ω-groupoids, and Finster and Mimram generalized this calculus to weak ω-categories. This paper gives a diagram calculus for *monoidal* weak ω-categories and proves a correspondence between the monoidal calculus and the non-monoidal one by a dimension shift, viewing a monoidal ω-category as an ω-category with exactly one object.

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