Publicacions més rellevants de la línia de recerca:
Localització homotòpica

Referència: Casacuberta, C., Scevenels, D. and Smith, J. H. Implications of large-cardinal principles in homotopical localization. *Advances in Mathematics*, **197(1)** (2005), pp. 120–139.

Abstract: The existence of arbitrary cohomological localizations on the homotopy category of spaces has remained unproved since Bousfield settled the same problem for homology theories in the decade of 1970. This is related with another open question, namely whether or not every homotopy idempotent functor on spaces is an f-localization for some map f. We prove that both questions have an affirmative answer assuming the validity of a suitable large-cardinal axiom from set theory (Vopěnka's principle). We also show that it is impossible to prove that all homotopy idempotent functors are f-localizations using the ordinary ZFC axioms of set theory (Zermelo–Fraenkel axioms with the axiom of choice), since a counterexample can be displayed under the assumption that all cardinals are nonmeasurable, which is consistent with ZFC.

Referència: Casacuberta, C., Golasiński, M. and Tonks, A. Homotopy localization of groupoids. *Forum Mathematicum*, **18(6)** (2006), pp. 967–982.

Abstract: In order to study functorial changes caused by homotopy localizations on the fundamental group of unbased simplicial sets, it is convenient to use groupoids instead of groups, and therefore localizations of groupoids become useful. In this article we develop homotopy localization techniques in the model category of groupoids, with emphasis on the relationship with homotopy localizations of simplicial sets and also with discrete localizations of groups.

Referència: Bagaria, J., Casacuberta, C. and Mathias, A. R. D. Epireflections and supercompact cardinals. *Journal of Pure and Applied Algebra*, **213(7)** (2009), pp. 1208–1215.

Abstract: We prove that the existence of arbitrarily large supercompact cardinals implies that every absolute epireflective class of objects in a balanced accessible category is a small-orthogonality class. In other words, if L is a localization functor on a balanced accessible category such that the unit morphism $X \to LX$ is an epimorphism for all X and the class of L-local objects is defined by an absolute formula, then the existence of a sufficiently large supercompact cardinal implies that L is a localization with respect to some set of morphisms.