Séminaire d'algèbre, géométrie et topologie
Jeudi 12 novembre à 14h
Salle I

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An overview of Homotopy Type Theory/Univalent Foundations

I will give an introduction to the recent stream of work known variously as "homotopy type theory" and "univalent foundations".

The core idea is that mathematics can be developed within a logical language whose basic objects are not just discrete sets (as in ZFC) but can be more general spaces, in the sense of homotopy theory. In particular, this gives a perhaps richer and more natural view of "universes" than traditional foundations admit.

More precisely, the logical system of Intensional Martin-Löf Type Theory admits models in various homotopy-theoretic settings (e.g. simplicial sets) ; in its language, one can very easily and naturally formulate standard homotopy-theoretic properties and constructions ; and with a few new axioms added to the language, one can recover many classical theorems and constructions in this setting.

I will focus on this aspect of HoTT — its use as a novel setting/language for homotopy theory — together with its amenability to computer formalisation.