Towards a constructive theory of o-minimal structures

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Related works:
short paper http://hlombardi.free.fr/LomMah.pdf,
draft of a long paper http://hlombardi.free.fr/Reels-geometriques.pdf

Abstract

We propose a geometric theory for the algebra of real numbers (without sign test and not using dependent choice). This constructive approach to "real closed fields" is based on a good description/axiomatization of semialgebraic continuous functions from $\mathbb{R}^n$ to $\mathbb{R}$.

This can be seen as a constructive rewriting of the classical theory of real closed rings.

By a convenient extension of this theory, our aim is to describe constructively the main properties of definable continuous functions for classical o-minimal structures, and to axiomatize these properties in a geometric theory.