Department of Mathematics, BGU

Model theory working seminar

On *Wednesday, November ,12 2025*

At *12:10 – 14:00*

In *Room 4*

Misha Gavrilovich

will talk about

Stable first-order theory as a simplicial profinite set

Abstract: We shall rewrite in the simplicial language the standard definitions of a complete first order theory, a model of it, and various characterisations of stability of a complete first order theory. In our reformulations the simplicial language replaces the standard definitions based on syntax, making them formally unnecessary. However, in the lectures that I shall explain these definitions both in standard language, and in the simplicial, diagram-chasing language. We shall assume only basic familiarity with category theory and model theory.

In this approach we view a complete first-order theory as a symmetric simplicial object in the category of profinite sets and open continuous maps, defined by the functor sending a finite set of variables into the Stone space of complete types in those variables. A model of a complete first-order theory is then a morphism

from a representable simplicial set satisfying certain lfiting properties reminiscent of, but weaker then, those in the definition of a fibration. The class of simplicial profinite sets corresponding to complete first order theories is characterised by the same lfiting properties required of the map from the simplicial covering space (decalage) forgetting the extra degeneracy.

In a concise manner our simplicial reformulations are presented in the notes[1]

[1] `http://mishap.sdf.org/rhsun.pdf`