

Department of Mathematics, BGU

AGNT

On Wednesday, December ,18 2024

At 14:10 – 15:10

In 101-

Gal Binyamini (Weizmann)

will talk about

Log-Noetherian functions

Abstract: I'll talk about a class of functions called Log-Noetherian that I recently introduced. They are holomorphic solutions of "regular-singular" systems of non-linear algebraic differential equations. They extend an earlier notion of "Noetherian functions" considered by Khovanskii and Tougeron, but enjoy better algebraic properties.

The main theorem is that these functions generate an "effectively o-minimal structure", meaning that one can give effective upper bounds for the complexity of sets defined by (first-order) formulas involving them - something akin to a Bezout theorem. In particular this proves Khovanskii's conjecture from the early eighties on counting solutions for systems of Noetherian equations. This o-minimal structure contains the universal covering maps of Shimura varieties and period maps for variations of Hodge structures, and essentially shows that all applications of o-minimality to these areas are effective. The theory is (currently) archimedean but I'll try to stress why I think a p-adic analog should be pursued.