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Title: Infinitary Logic Meets Russellian Definite Description Theory

Abstract: In this talk, I will consider extensions of the Russellian theory to infinitary first-order languages enriched with predicate abstraction and definite description operators. It is well known that many infinitary logics fail to satisfy properties of classical first-order logic, such as compactness, completeness, and the upward Löwenheim–Skolem–Tarski property with respect to Tarskian semantics. Nevertheless, infinitary logics are valuable for their greater expressive power. For example, torsion abelian groups, finitely generated groups, non-finitely generated groups, and linear orders isomorphic to the integers can be axiomatized using suitable infinitary languages. For this reason I will consider extending the Boolean-valued semantics for infinitary logics by adding satisfiability conditions for formulas involving λ and ι operators. I also discuss some of the forcing-invariance properties of the resulting model-existence results, along with directions for further work.