

## **Groups definable in partial differential fields with an automorphism**

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This is a joint work with Ronald Bustamente Medina and Zoé Chatzidakis. In this talk, we focus on differential and difference fields from a model-theoretic perspective. A differential field is a field equipped with a set of commuting derivations, while a difference–differential field is a differential field endowed with an automorphism that commutes with the derivations.

Cassidy studied definable groups in differentially closed fields, particularly Zariski-dense definable subgroups of simple algebraic groups, and showed that such groups are isomorphic to the rational points of an algebraic group over a definable field. In this talk, we study groups definable in existentially closed difference–differential fields. In particular, we study Zariski-dense definable subgroups of simple algebraic groups and establish an analogue of Cassidy’s result for partial differential fields. We will also discuss possible generalizations of these results for the case of several automorphisms.