Speaker: Daniel Litt

Title: The arithmetic of differential equations

Abstract: When does an algebraic differential equation have solutions which are themselves algebraic functions? This question goes back at least to Fuchs, in 1875. Its conjectural answer, due to Grothendieck and Katz in the linear case and Ekedahl–Shepherd–Barron–Taylor and Bost in general, situates it as one of number theory. I'll explain these conjectures and some progress towards them, joint with Josh Lam, for isomonodromy differential equations. This class of differential equations includes, for example, the Painlevé VI equation. This work is in part an excuse to study "motivic" aspects of the space of all algebraic differential equations.