

# TEMPLE UNIVERSITY

Department of Mathematics

## Analysis Seminar

Zoom meeting

Monday, April 5 2021, 2:30 p.m.

### *On Optimal Control Problem related to the Infinity Laplacian*

by Henok Mawi

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Abstract: The infinity Laplacian equation is given by

$$\Delta_{\infty} u := u_{x_i} u_{x_j} u_{x_i x_j} = 0 \quad \text{in } \Omega$$

where  $\Omega$  is an open bounded subset of  $\mathbb{R}^n$ . This equation is a kind of an Euler-Lagrange equation of the variational problem of minimizing the functional

$$I[v] := \text{ess sup } |Dv|,$$

among all Lipschitz continuous functions  $v$ , satisfying a prescribed boundary value on  $\partial\Omega$ . The infinity obstacle problem is the minimization problem

$$\min\{I[v] : v \in W^{1,\infty}, v \geq \psi\}$$

for a given function  $\psi \in W^{1,\infty}$  which we refer to as the *obstacle*.

In this talk I will discuss an optimal control problem related to the infinity obstacle problem. This is joint work with Cheikh Ndiaye.