Lucio M.G. Prado* (lprado@gradcenter.cuny.edu), Department of Mathematics, BMCC, The City University of New York, New York, NY 10007, New York, NY 10007. \textbf{Poisson Equation for p-Laplacian on Infinite Graphs and Existence of Solution.}

The aim of this talk is to present concepts and techniques from p-potential theory on Riemannian manifolds adapted to infinite graphs. We investigated p-Laplacian Poisson equation on a connected locally finite simplicial graph G with vertex set V. The principal tool will be p-capacity that allow us to classify the infinite graphs regarding p-hyperbolicity/p-parabolicity, under determined condition in terms of \( p \). With p-hyperbolicity/p-parabolicity, we examine the conditions under which the existence of solution of the Poisson equation on p-Dirichlet space can be determined. Finally, if time permits, examples will be presented.

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