Department of Mathematical Sciences
Faculty and Graduate Research Colloquium

Thursday, November 16
1:00-1:50pm
RB 450

"Least Gradient Problems in Metric Measure Spaces"
Joshua Kline (University of Cincinnati)

Abstract:

It is known in the Euclidean and metric settings that functions of bounded variation in nice domains have traces belonging to L^1 on the boundary, and likewise, L^1-functions on the boundary have BV-extensions into the domain. For functions of least gradient, that is, BV-energy minimizers, this trace and extension question is much more subtle, and can be viewed in terms of a boundary-value problem: which class of L^1-boundary data admits least gradient solutions in the domain? While continuous functions belong to this class, Spradlin and Tamasan (2014) showed that not all L^1-functions admit solutions. In this talk, we consider this question in both Euclidean and metric settings, and discuss some recent existence results for various discontinuous boundary data. By modifying the Spradlin and Tamasan example, we also show how the trace class of least gradient functions does not in general form a vector space.