

GRADUATE STUDENT GEOMETRY SEMINAR

Guest Speaker: Ilya Marchenko

University of Notre Dame

Date: Friday, November 13, 2020

Time: 3:00 PM

Location: Zoom

Zoom URL: [notredame.zoom.us/j/96302373523?
pwd=SWZMOTFuRct2UElrdGk0bStjc0M2Zz09](https://notredame.zoom.us/j/96302373523?pwd=SWZMOTFuRct2UElrdGk0bStjc0M2Zz09)



Lecture Title:

Regularity of Singular Sets of Solutions to Elliptic Equations

Abstract

We use pointwise Schauder estimates and a technique from free boundary problems to show that the singular set of a solution to a homogeneous linear elliptic equation with appropriate regularity assumptions on the coefficients is contained in a countable union of $C^{1,\alpha}$ graphs. More precisely, the singular set can be expressed as a union of level sets based on the vanishing order of points in the singular set. Each of these level sets is made up of j -dimensional pieces for $j = 1, \dots, n - 2$. We show that every such piece is contained in a countable union of j -dimensional $C^{1,\alpha}$ graphs.