

DEFENSE OF THE DOCTORAL DISSERTATION

DEPARTMENT OF MATHEMATICS

“Asymptotic Expansions at Infinity for Solutions of Some Nonlinear Geometric PDE in Exterior Domains”



Ilya Marchenko

Tuesday, April 2, 2024

Time: 9:00 AM

Location: 127 Hayes-Healy Bldg

Examination Committee:

Qing Han, Advisor

Nick Edelen

Matt Gursky

Gerard Misiolek



Abstract:

We study asymptotic behaviors of solutions of a family of fully nonlinear elliptic equations in $\mathbb{R}^n \setminus \bar{B}_1$ and establish expansions at infinity up to arbitrary order. We then prove the existence of solutions with prescribed asymptotic behavior at infinity and an arbitrarily high order of approximation. We also prove a similar existence result for solutions of the minimal surface equation in $\mathbb{R}^n \setminus \bar{B}_1$ whose gradient vanishes at infinity.