

Regularity and explicit L^∞ estimates for a class of elliptic systems

Maya Chhetri

The University of North Carolina at Greensboro

We consider a system of two linear decoupled Elliptic equations that are coupled on the boundary with a nonlinear boundary condition. We use De Giorgi-Nash-Moser iteration scheme to establish that weak solutions of the system with critical growth on the boundary are in $L^\infty(\Omega)$. Moreover, we provide an explicit $L^\infty(\Omega)$ estimate of weak solutions with subcritical growth on the boundary, in terms of powers of $H^1(\Omega)$ -norms, by combining the elliptic regularity of weak solutions with Gagliardo–Nirenberg interpolation inequality.

In Special Session 20 on Advances in Nonlinear PDEs, Analysis and Geometry at the Mathematical Congress of the Americas 2025.