Analysis and Differential Geometry Seminar

Regularity estimates for elliptic transmission problems

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Abstract: We present regularity estimates for solutions to transmission problems driven by second order elliptic equations with curved interfaces. First, we consider a transmission problem for harmonic functions and use the mean value theorem to prove sharp $C^{1,\alpha}$ estimates up to the transmission surface. Then, we show various up to the boundary Hölder regularity estimates for viscosity solutions to transmission problems for fully nonlinear uniformly elliptic equations depending on the regularity of the interface. Among the main tools, we introduce an ABP estimate for the problem and new constructive stability results. These are joint works with Luis A. Caffarelli (UT Austin) and María Soria-Carro (Rutgers)

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Mathematics
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