Analysis Seminar

Title: The logistic equation with nonlinear directed advection

Speaker: Jack McNicholl

Date: Tue 20th February 2024 at 3:00PM

Location: E0.32 (beside Pi restaurant)

Abstract: We consider the logistic population model with advection term, expressed by the nonlinear gradient of the population concentration. We discuss the existence of positive solutions and provide some biological interpretations of the results. We present conditions for the regularity of the solution, obtain some partial converse results and draw connections between parameters and the geometric conditions of the domain. One new feature we introduce is the singularity, which we circumvent by the use of various techniques in PDEs including sub- and super-solution methods, as well as embeddings of Sobolev spaces.'

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