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Parabolic boundary value problems and applications to population models with spatially varying growth rate and external forcing

This presentation is based on recent work on parabolic boundary value problems with nonlinearity changing signs and applications to population models with spatially varying growth rate and external forcing. The fixed point index theory for r-nowhere normal-outward compact maps obtained by Yang and Lan in 2016 will be presented.This index theory is a generalization of the classical fixed point index theory for compact self-maps defined in cones in Banach spaces, and is a good tool to deal with the above boundary value problems and population models.

This is joint work with Professor Wei Lin at Fudan University