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講義題目: Normal stability for quasilinear parabolic equations and applications to free boundary problems.

Abstract: I will discuss the qualitative behavior of solutions to quasilinear parabolic equations in the case where the set of equilibria \mathcal{E} forms a finite dimensional C^1 -manifold. It will be shown that if \mathcal{E} consists of *normally stable* equilibria, then solutions starting near one of these equilibria exist globally and converge to some equilibrium on \mathcal{E} at an exponential rate. A typical example is furnished by the situation where the differential equation under consideration involves symmetries. Applications to geometric evolution laws and free boundary problems in fluid dynamics and phase transitions will be given.