Barles, G.; **Souganidis, P. E.**

Convergence of approximation schemes for fully nonlinear second order equations. (English)

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Asymptotic Anal. 4, No. 3, 271-283 (1991).

Authors' summary: We present a simple, purely analytic method for proving the convergence of a wide class of approximation schemes to the solution of fully nonlinear second-order elliptic or parabolic partial differential equations. Roughly speaking, we prove that any monotone, stable and consistent scheme converges to the correct solution provided that there exists a comparison principle for the limiting equation. This method is based on the notion of viscosity solution of Crandall and Lions and it gives completely new results concerning the convergence of numerical schemes for stochastic differential games.

Reviewer: Michael Sever (Jerusalem)

MSC:

65N12	Stability and convergence of numerical methods for boundary value problems involving PDEs
35J65	Nonlinear boundary value problems for linear elliptic equations
35K60	Nonlinear initial, boundary and initial-boundary value problems for linear parabolic equations
91A15	Stochastic games, stochastic differential games
91A23	Differential games (aspects of game theory)

Keywords:

nonlinear second order equations; convergence; monotone, stable and consistent scheme; comparison principle; viscosity solution; stochastic differential games