A semi-Lagrangian scheme for the game p-Laplacian

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Abstract. We present and analyze an approximation scheme for the two-dimensional game p-Laplacian in the framework of viscosity solutions. The approximation is based on a semi-Lagrangian scheme which exploits the idea of p-averages. We study the properties of the scheme and prove that it converges, in particular cases, to the viscosity solution of the game p-Laplacian. We also present a numerical implementation of the scheme for different values of p; the numerical tests show that the scheme is accurate.

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