

## Discontinuous minimax solution

**A.I.Subbotin** Generalized Solutions of First-Order PDEs:  
the Dynamical Optimization Perspective, 1995

- Boundary-value problem for the Isaacs - Bellman equation:

$$\begin{aligned} H(x, \nabla\varphi(x)) &= -1, & x \in R^n \setminus M \\ \varphi(x) &= 0, & x \in \partial M \end{aligned}$$

$$H(x, p) = \min_{u \in P} \max_{v \in Q} \langle p, f(x, u, v) \rangle = \max_{v \in Q} \min_{u \in P} \langle p, f(x, u, v) \rangle$$

- Generalized (discontinuous) minimax solution

$$\varphi(\cdot) : R^n \setminus M \rightarrow [0, \infty]$$

of the boundary-value problem **coincides** with the value function of the time-optimal game problem.