A parabolic problem with constraint in population dynamics

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SUMMARY

Variational inequalities are well known in the literature of applied mathematics and lead to many applications. They are related to obstacle problems and free boundary problems. In this talk we present a parabolic problem with a unilateral constraint: the existence of solution and Lewy-Stampacchia's inequality; in the context of a family of operators more general than the monotonous case studied in [1]. This applies for example to a population forced to live in a particular area of space [2].

Keywords: Variational inequalities, pseudo-monotone operator, Lewy-Stampacchia's inequality.

AMS Classification: 35K86, 35R35

References

[1] F. DONATI.. A penalty method approach to strong solutions of some nonlinear parabolic unilateral problems. *Nonlinear Anal., Theory Methods Appl.* **6**, 585–597, 1982.

[2] M. ODUNLAMI AND G. VALLET. Modelling and Mathematical Analysis of the Glass Eel Migration in the Adour River Estuary. *Math. Model. Nat. Phenom* **7**(3), 168 - 185, 2012.

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