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KOLMOGOROV GENERALIZED PREDATOR-PREY MODELS

Robert Stańczy*, Dorota Bors

Instytut Matematyczny, Uniwersytet Wrocławski,
Wrocław, Poland

*stanczr@math.uni.wroc.pl

ABSTRACT

The existence of Lyapunov function is proved for some general dynamical system in Kolmogorov framework

$$x' = g(x)G(x, y), \quad y' = h(y)H(x, y)$$

with nonzero stationary solution under some monotonicity assumptions imposed on nonlinearities. The applications include different variations of predator-prey models. Moreover, some optimal control problem of fishing in Ghana is considered. The results were obtained in collaboration with Dorota Bors from University of Lodz and students from University of Wrocław, including Łukasz Rębisz, partially based on a generalization of the method applied successfully to astrophysical models.

REFERENCES

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