SENSITIVITY ANALYSIS AND BIFURCATION ANALYSIS

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ABSTRACT

Local sensitivity analysis [2, 4] is commonly used to prioritise the most influential model parameters or to identify no-effect parameters. On the other hand bifurcation analysis [3] is specifically aimed at detecting critical points in the parameter space where the long-term dynamics changes qualitatively. It will be shown that combining the two approaches gives added value with respect to analysis efficiency as well as results. Valuable information on global sensitivity [4, 5] of the model to certain parameters can be obtained only by separately considering regions in the parameter space associated with different attractors, rather than applying sensitivity analysis at once to the entire parameter space. The Bazykin-Berezovskaya predator-prey model [1] with Allee effects is used to demonstrate the proposed methodologies.

References

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