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An Interval-parameter Fuzzy Robust Nonlinear Programming Model for Water Quality Management

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Author(s)

Min Liu, Guoxin Nie, Ming Hu, Renfei Liao, Yangshuo Shen

ABSTRACT

Planning for water quality management is important for facilitating sustainable socio-economic development; however, the planning is also complicated by a variety of uncertainties and nonlinearities. In this study, an interval-parameter fuzzy robust nonlinear programming (IFRNP) model was developed for water quality management to deal with such difficulties. The developed model incorporated interval nonlinear programming (INP) and fuzzy robust programming (FRP) methods within a general optimization framework. The developed IFRNP model not only could explicitly deal with uncertainties represented as discrete interval numbers and fuzzy membership functions, but also was able to deal with nonlinearities in the objective function.

KEYWORDS

Water Quality Management; Interval Programming; Fuzzy Robust Programming; Nonlinear Programming; Uncertainty

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