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Parameter Estimation of Models with Limit Cycle based on the Reformulation of the Objective Function

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Highlights

- **A methodology for parameter estimation for models with limit cycle is proposed, where only a driving term is added to the classical objective function formulation.**
- **The driving term guides the optimization to parameter values, which lead to an oscillatory behavior.**
- **The proposed methodology reduces the non-convexity of the optimization problem.**
- **After some optimization iterations, the driving term disappears, remaining only the classical objective function.**
- **The results showed that the proposed methodology ensured the oscillatory behavior of the model.**
- **The same approach can also be applied to any other objective function. It is not restricted to the classical least squares optimization problem.**

ABSTRACT

Many processes show limit cycles, meaning that the system presents oscillatory behavior. The parameter estimation of such kind of systems is not a simple task, due to the non-convexity of the optimization problem. This paper proposes the inclusion of a driving term based on the damping

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