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Follow-up experimental designs for computer models and physical processes. (English)

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Summary: In many branches of physical science, when the complex physical phenomena are either too expensive or too time consuming to observe, deterministic computer codes are often used to simulate these processes. Nonetheless, true physical processes are also observed in some disciplines. It is preferred to integrate both the true physical process and the computer model data for better understanding of the underlying phenomena. In this paper, we develop a methodology for selecting optimal follow-up designs based on integrated mean squared error that help us capture and reduce prediction uncertainty as much as possible. We also compare the efficiency of the optimal designs with the intuitive choices for the follow-up computer and field trials.

MSC:

62 Statistics

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Gaussian process; model calibration; integrated mean squared error

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