

Title:

**Modern Sequential Analysis and its Applications to Computerized Adaptive Testing**

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**Abstract:**

After a brief review of recent advances in sequential analysis involving sequential generalized likelihood ratio tests, we discuss their use in psychometric testing and extend the asymptotic optimality theory of these sequential tests to the case of sequentially generated experiments, of particular interest in computerized adaptive testing. We then show how these methods can be used to design adaptive mastery tests, which are asymptotically optimal and are also shown to provide substantial improvements over currently used sequential and fixed length tests.

Key words: sequential analysis, computerized adaptive testing, mastery testing, generalized likelihood ratio statistics, item response theory.