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Locating and avoiding errors in software testing

The past 15 years have seen a great deal of research on the combinatorial object used in reliability testing: the covering array. In the past few years the model has been adapted to incorporate application relevant issues: known non-interactions, mixed alphabet sizes and mixed strength. We will discuss two very recent adaptations which are surprisingly related: avoiding pairs of forbidden interactions and locating the exact location of an error when its existence is discovered. We will discuss the complexity of these questions, combinatorial characterizations of feasibility and arrays and algorithms that solve these problems in some instances.