

## **At-least-m-different predicate**

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We consider the construction of Balanced Incomplete Block Design over finite sets of integers with additional constraints on the sum of the blocks. The original motivation for the problem arises from medical drug experiments where, at the end of the experiment, one would ideally have all patients receive equal medication. We give sufficient conditions for the existence of BIBD with equal block sums as well as integer programming formulation for the construction of such designs based on facet-defining inequalities.

Keywords: facet-defining inequalities, BIBD, integer programming