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## A KRONECKER-PRODUCT DESIGN AND ITS REDUCIBLE ASSOCIATE CLASSES

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Abstract: Using incidence matrices $N_{i}$ of balanced incomplete block (BIB) designs and their complementary incidence matrices $N_{i}^{*}$ for $i=1,2$, a partially balanced incomplete block (PBIB) design in the form $N_{1} \otimes N_{2}+N_{1}^{*} \otimes N_{2}+N_{1} \otimes N_{2}^{*}$ is dealt with. Necessary and sufficient conditions for this rectangular PBIB design to be reducible to 2 -associate PBIB designs are discussed. It is also shown that this type of designs is not reducible to any group divisible PBIB design.

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