3-GDD$(n_1, n_2, 4; \Lambda_1, \Lambda_2)$

Dinesh G. Sarvate, College of Charleston
Li Zhang, The Citadel*

We define a 3-GDD$(n_1, n_2, k; \Lambda_1, \Lambda_2)$ where $n_1 \neq n_2$ by extending the definitions of a group divisible design and a t-design. A 3-GDD$(n_1, n_2, k; \Lambda_1, \Lambda_2)$ (where $n_1 \neq n_2$) is a set X of $n_1 + n_2$ elements partitioned into two parts of sizes n_1 and n_2, respectively, called groups together with a collection of k-subsets of X called blocks, such that (i) every 3-subset of each group occur in Λ_1 blocks and (ii) every 3-subset where two elements are from one group and one element from the other group occurs in Λ_2 blocks. For the problem where $n_1 = n_2$, it is generally written as a 3-GDD$(n, 2, k; \Lambda_1, \Lambda_2)$. Some necessary conditions for its existence and examples are discussed in this presentation.