



# A method of constructing pairwise balanced designs containing parallel classes

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**Abstract.** The obvious way to construct a GDD (group-divisible design) recursively is to use Wilson's Fundamental Construction for GDDs. Then a PBD (pairwise balanced design) is often obtained by adding a new point to each group of the GDD. However, after constructing such a PBD, it might be the case that we then want to identify a parallel class of blocks. In this short note, we explore some possible ways of doing this.

## References

- [1] C.J. Colbourn and J.H. Dinitz, *Handbook of Combinatorial Designs, Second Edition*, Chapman & Hall/CRC, 2007.
- [2] M. Rosenfeld, Independent sets in regular graphs, *Israel J. Math.* **2** (1964), 262–272.
- [3] I. Wanless, Transversals in Latin squares: A survey, In: *Surveys in Combinatorics 2011*, R. Chapman, ed. London Math. Soc. Lecture Note Ser., Cambridge University Press, 2011, pp. 403–437.
- [4] R.M. Wilson, Concerning the number of mutually orthogonal Latin squares, *Discrete Math.* **9** (1974), 181–198.

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