

**Colbourn, Charles J.; Rosa, Alexander**

**Triple systems.** (English) [Zbl 0938.05009](#)

*Oxford Mathematical Monographs*. Oxford: Clarendon Press. xvi, 560 p. (1999).

This book is a useful reference for both students and researchers in combinatorics and related disciplines. Although triple systems are among the simplest designs, they provide a reflection of the more general field of design theory. Indeed, triple systems are often the testing ground for ideas in design theory. *Triple systems* shows the classical ties of triple systems to geometry and algebra, the close connections to graph theory, and the more modern combinatorial and computational techniques and ideas used today in design theory. The authors convey the rich variety of constructions and applications for triple systems. They make it clear that the study of triple systems is not complete; open problems are listed at the ends of Chapters 4-25 and they include several new and interesting applications of triple systems. Because of the wealth of material on triple systems, the authors have had to choose certain areas to emphasize. Chapters 0-3 provide basic material on the construction and existence of triple systems, including the historical background and the classical constructions. Chapters 4-8 contain material about triple systems themselves: enumeration, isomorphism, automorphism, and subsystems. Chapters 9-25 contain a variety of topics. They include packings and coverings for triple systems, embeddings, special configurations, intersections, large sets and partitions, independent sets, chromatic numbers, resolvability, nested triple systems, decomposability, and directed and Mendelsohn triple systems. The extensive bibliography lists all publications whose main focus is on triple systems. The bibliography extends beyond the material in the text and is a valuable resource on its own.

Reviewer: [E.R.Lamken \(Pasadena\)](#)

**MSC:**

[05B07](#) Triple systems

[05-02](#) Research exposition (monographs, survey articles) pertaining to combinatorics

Cited in **7** Reviews  
Cited in **87** Documents

**Keywords:**

[triple systems](#); [open problems](#)