

Introduction to Algebraic Design Theory

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Abstract

Algebraic design theory is essentially an algebraic approach to studying and constructing combinatorial structures such as orthogonal designs, Hadamard matrices, weighing matrices and Latin squares. In this talk I will introduce *pairwise combinatorial designs* (PCDs) and show how many known combinatorial structures, including those mentioned, are in fact PCDs. I will then discuss the main topic of my Ph.D. thesis, group development and cocyclic development of PCDs, which is an entirely algebraic approach to studying and constructing PCDs. In particular I will talk about Hadamard matrices and similar related structures.