



Department of Mathematics and Statistics Colloquium

Tuesday, April 9, 2019

AMB 164 4:00 pm

**New extremal binary self-dual codes
and designs from a Baumert-Hall array**

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Abstract

In this work, we introduce new construction methods for self-dual codes using a Baumert-Hall array. We apply the constructions over the alphabets \mathbb{F}_2 and $\mathbb{F}_4 + u\mathbb{F}_4$ and combine them with extension theorems and neighboring constructions. As a result, we construct 46 new extremal binary self-dual codes of length 68, 26 new best known Type II codes of length 72 and 8 new extremal Type II codes of length 80 that lead to new $3 - (80, 16, 665)$ designs. Among the new codes of length 68 are the examples of codes with the rare $\gamma = 5$ parameter in $W_{68,2}$.

Refreshments at 3:45