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Masters of Science

Codes with Singleton Defects of One and Two

UNIVERSITY OF NEW BRUNSWICK

THESIS DEFENCE AND EXAMINATION

in Partial Fulfillment

of the Requirement for the Degree of
Master of Science

by

Zhipeng Zhang

in the Department of Mathematics & Statistics

U.N.B., Saint John, N.B.

Tuesday, April 23rd, 2024
1:00 p.m.

Ganong Hall, Room 215

Examining Committee

Dr. Tim Alderson	Supervisor
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Dr. Connie Stewart	Chair of Oral Examination

Abstract

This thesis covers codes with Singleton defects of one and two. The discussion on codes with a Singleton defect of one begins by introducing AMDS and NMDS codes, then proceeds to explore the maximum lengths of MDS and NMDS codes. This part of the discussion concludes by proving some results using projective geometry. Following this, the thesis shifts focus to studying AAMDS and NNMDS codes, which are codes with a Singleton defect of two. This analysis begins with definitions of AAMDS and NNMDS codes, followed by an exploration of the differences between these codes within the context of projective geometry, and ends with an upper bound on the length of long AMDS codes.