Applied Mathematics

McGill

Joint Applied Mathematics/Discrete Mathematics

April 22, 2002

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Title: Projections on Codes.

MONDAY April 22, 2002

Time: 4:30 pm Room: Burnside 1205

Wine and cheese after the seminar.

Abstract:

The construction of good binary (linear) codes from shorter codes has been widely studied by coding theorists. One motivation is to lower the decoding complexity of the original code. We will start with a survey of the theory of error-correcting codes. After taking a look at the main problems, notations, and techniques, we will look at examples of codes and discuss some of the current applications and trends in the research. From there, we will discuss a certain projection technique whereby one can obtain an additive code over GF(4) from a binary linear code of longer length. We generalize the projection, look at several examples, and discuss the associated automorphism groups.

This talk will be accessible to a diverse audience.

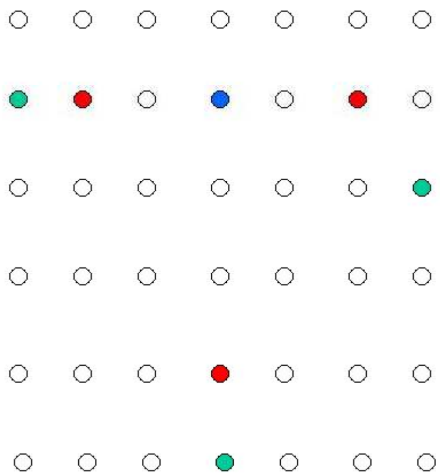

Figure 1: *The red dots are the codewords, the green ones are the received words that can be corrected to the closest codewords and the blue dot is a received word that is equidistant from 2 codewords and therefore cannot be corrected.*

`http://www.sims.berkeley.edu/~rosario/projects/error_correcting_codes.html`