

# Linear complementary dual codes from adjacency matrices of graphs

**Bernardo Rodrigues**

**School of Mathematics, Statistics and Computer Science  
University of KwaZulu-Natal  
Durban, South Africa**

This is joint work with **Jennifer Key**, Institute of Mathematics, Physics and Computer Science, Aberystwyth University (UK)

A linear code with complementary dual (LCD) is as a code for which the hull is zero, i.e. if  $C$  is a linear code,  $C$  is LCD if  $\text{Hull}(C) = C \cap C^\perp = \{0\}$ . Thus  $C^\perp$  is also LCD, and if  $C$  is of length  $n$  over a field  $F$ , then  $F^n = C \oplus C^\perp$ .

In the talk it is shown how LCD codes with a particularly useful feature can be found from row spans over finite fields of adjacency matrices of graphs by considering these together with the codes from the associated reflexive graphs and complementary graphs. Application is made to some particular classes, including uniform subset graphs and strongly regular graphs.