

Switching Steiner Systems

PATRIC R. J. ÖSTERGÅRD

Department of Communications and Networking

Helsinki University of Technology TKK

P.O. Box 3000, 02015 TKK, Finland

Switching is a local transformation that when applied to a combinatorial object gives another object with the same parameters. Switching provides a means for constructing new objects with given parameters as well as for understanding the reason behind a multitude of isomorphism classes for certain types of objects. For Steiner systems switches correspond to trades, and particularly interesting are trades whose trade mates are easily detected (such as cycle switches for Steiner triple systems). An attempt to unify a central type of switching will be made, starting from the case of binary perfect codes and proceeding via unrestricted binary error-correcting codes and constant weight codes to Steiner systems. As an example, it has been shown that any two Steiner triple systems of order 19 are connected to each other via a sequence of switches.

This is in part joint work with Petteri Kaski and Olli Pottonen.