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William J. Martin* (martin@wpi.edu), 100 Institute Rd, Worcester, MA 01609, and **Mikhail E. Muzychuk** (muzy@Netanya.ac.il), University St. 1, 42365 Netanya, Israel. *Linked systems of designs.*

Cameron introduced linked systems of symmetric designs. Restricting to the case where all pairwise parameters are the same, we consider a set X of size wv ($w \geq 2$) partitioned into w sets X_1, X_2, \dots each of size v and a graph G_1 on vertex set X with the following properties:

- no edge of G_1 has both ends in the same “fibre” X_i ;
- between any X_i and X_j ($i \neq j$), the induced subgraph is the incidence graph of a symmetric (v, k, λ) -design;
- if $x \in X_i$ and $y \in X_j$ with $i \neq j$, then the number of common neighbors that x and y have inside any X_k ($k \neq i, j$) depends only on whether or not x and y are adjacent (in G_1) and not on the choice of x, y , nor i, j or k .

Only one infinite family of linked systems of symmetric designs is known with $w > 2$; these are the “Cameron-Seidel” schemes coming from Kerdock codes.

In this talk, we will explore these objects, as well as linked systems of strongly regular designs and, more generally, Q -antipodal association schemes. We will discuss the known examples, structural results, as well as upper bounds on the parameter w . (Received September 14, 2010)