ROBERT BAILEY, Grenfell Campus, MUN
On the 486-vertex distance-regular graphs of Koolen–Riebeek and Soicher

In this talk, we consider three imprimitive distance-regular graphs with 486 vertices and diameter 4: the Koolen–Riebeek graph (which is bipartite), the Soicher graph (which is antipodal), and the incidence graph of a symmetric transversal design obtained from the affine geometry $\mathrm{AG}(5,3)$ (which is both). We will show that each of these is preserved by the same rank-9 action of the group $3^5 : (2 \times M_{10})$, and the connection is explained using the ternary Golay code.

Ths is joint work with Daniel Hawtin (University of Rijeka, Croatia).