

SQS-Graphs of Extended 1-Perfect Codes

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An extended 1-perfect code \mathcal{C} folds over its kernel via the Steiner quadruple systems associated with its codewords. The resulting folding, proposed as a graph invariant for \mathcal{C} , distinguishes among the 361 nonlinear codes \mathcal{C} of kernel dimension κ with $9 \geq \kappa \geq 5$ obtained via Solov'eva-Phelps doubling construction. Each of the 361 resulting graphs has most of its nonloop edges expressible in terms of the lexicographically disjoint quarters of the products of the components of two of the ten 1-perfect partitions of length 8 classified by Phelps, and loops mostly expressible in terms of the lines of the Fano plane.