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Jon-Lark Kim* (j1.kim@louisville.edu), Department of Mathematics, University of Louisville, 328 Natural Sciences Building, Louisville, KY 40292. *Skew Hadamard Designs and Their Codes*. Preliminary report.

There has been interested in the connection between Hadamard matrices and self-dual codes. From a Hadamard matrix H of order $4n$, a 3-design T of parameters $3-(4n, 2n, n)$ is obtained. The derived design D has parameters $2-(4n - 1, 2n - 1, n - 1)$. If H is skew Hadamard, then it is known that the code $C_p(T)$, where $p|n$, is self-dual over $GF(p)$.

In this talk, we construct codes from skew Hadamard designs, in particular, we construct an optimal $[20, 10, 8]$ self-dual code over $GF(5)$, which seems to be new. Further we describe that the extended quadratic residue code of prime length of the form $4n - 1$ over $GF(p)$ can be constructed from the Paley Hadamard matrix of order $4n$, where p divides n .

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