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Master Thesis Defense

Entitled

OVALS AND NIHO BENT FUNCTIONS IN SMALL DIMENSIONS

by

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Abstract

In this thesis hyperovals and ovals are considered in the projective plane $PG(2,q)$, $q = 2^m$ even. Traditionally these objects are studied algebraically via O-polynomials. In our work a different approach is used by means of g-functions. These functions also provide a natural description for Niho bent functions. Using g-functions, all ovals and Niho bent functions are listed up to equivalency for dimensions $m \leq 6$.

Keywords: projective planes, affine planes, hyperovals, ovals, Niho bent functions, bent functions.