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Dae San Kim* (dskim@sogang.ac.kr), Department of Mathematics, Sogang University, Seoul, 121-742, South Korea. *An Infinite Family of Recursive Formulas Generating Power Moments of Kloosterman Sums with Trace One Arguments: $O(2n + 1, 2^r)$ Case.*

In this paper, we construct an infinite family of binary linear codes associated with double cosets with respect to certain maximal parabolic subgroup of the orthogonal group $O(2n + 1, q)$. Here q is a power of two. Then we obtain an infinite family of recursive formulas generating the odd power moments of Kloosterman sums with trace one arguments in terms of the frequencies of weights in the codes associated with those double cosets in $O(2n + 1, q)$ and in the codes associated with similar double cosets in the symplectic group $Sp(2n, q)$. This is done via Pless power moment identity and by utilizing the explicit expressions of exponential sums over those double cosets related to the evaluations of “Gauss sums” for the orthogonal group $O(2n + 1, q)$. (Received September 06, 2009)