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Finley Freibert* (fjfrei01@louisville.edu), 328 Natural Science Building, University of Louisville, Louisville, KY 40292, and **Jon-Lark Kim**, 328 Natural Science Building, University of Louisville, Louisville, KY 40292. *Optimum Distance Profiles and Optimal Subcodes of Binary Self-Dual Type II Codes.*

Self-dual codes have widespread relations to various areas such as combinatorial designs, unimodular lattices, and group theory. A self-dual code is called *doubly-even* or *Type II* if the weights of the codewords are divisible by 4. Let C be a binary $[n, k]$ code and let $C_0 = C$. A sequence of linear subcodes of C , $C_0 \supset C_1 \supset \cdots \supset C_{k-1}$ is called a *subcode chain*, where the dimension of C_i is $k - i$ for $i = 0, \dots, k - 1$. Let $d_i := d(C_i)$ be the minimum distance of C_i . Then the sequence $d_0 \leq d_1 \leq \cdots \leq d_{k-1}$ is called a *distance profile* of C . Luo, Vinck, and Chen (2010) have studied the optimum distance profiles of Reed-Solomon codes, Golay codes, the first order Reed-Muller codes, and the second order Reed-Muller codes. In this talk, we examine optimum distance profiles and Optimal Subcodes of extremal Type II codes of lengths 24 and 32, and give some direction towards the optimum distance profile of the unique extremal Type II code of length 48. (Received September 20, 2011)