

WEPD – Type I [56, 28, 10]

This is a database of known weight enumerator parameters for singly-even binary self-dual [56, 28, 10] codes.

The possible weight enumerators of a singly-even binary self-dual [56, 28, 10] code are given in [5] as

$$\begin{aligned}W_{56,1}^I &= 1 + (308 + 4\alpha)x^{10} + (4246 - 8\alpha)x^{12} + \dots, \\W_{56,2}^I &= 1 + (308 + 4\alpha)x^{10} + (3990 - 8\alpha)x^{12} + \dots,\end{aligned}$$

where $\alpha \in \mathbb{Z}$.

See the links below for lists of known values of α for $W_{56,1}^I$ and $W_{56,2}^I$.

- [W_{56,1}^I known parameters](#) (from [1–6])
- [W_{56,2}^I known parameters](#) (from [2–6])

References

- [1] J. Gildea, A. Kaya, A. Tylyshchak, and B. Yildiz. A group induced four-circulant construction for self-dual codes and new extremal binary self-dual codes, 2019. [arXiv:1912.11758](#).
- [2] J. Gildea, A. Kaya, A. Tylyshchak, and B. Yildiz. A modified bordered construction for self-dual codes from group rings. *J. Algebra Comb. Discrete Struct. Appl.*, 7(2):103–119, 2020. doi: [10.13069/jacodesmath.729402](#).
- [3] J. Gildea, A. Korban, and A. M. Roberts. New binary self-dual codes of lengths 56, 58, 64, 80 and 92 from a modification of the four circulant construction. *Finite Fields Appl.*, 75, 2021. doi: [10.1016/j.ffa.2021.101876](#).
- [4] J. Gildea, A. Korban, A. M. Roberts, and A. Tylyshchak. Extremal binary self-dual codes from a bordered four circulant construction. *Discrete Math.*, 346(8), 2023. doi: [10.1016/j.disc.2023.113425](#).
- [5] M. Harada and K. Saito. Singly even self-dual codes constructed from Hadamard matrices of order 28. *Australas. J. Combin.*, 70(2):288–296, 2018.
- [6] A. M. Roberts. Constructions of extremal and optimal self-dual and Hermitian self-dual codes over finite fields using circulant matrices. Master’s thesis, University of Chester, Chester, UK, 2020. https://drive.google.com/file/d/1CMjnuBvQtrXOY8foy6_gfXOcFFuHAAFs/view.