

WEPD – Type I [80, 40, 14]

This is a database of known weight enumerator parameters for singly-even binary self-dual [80, 40, 14] codes.

The weight enumerator of a singly-even binary self-dual [80, 40, 14] code is given in [9] as

$$W_{80}^I = 1 + (3200 + 4\alpha)x^{14} + (47645 - 8\alpha + 256\beta)x^{16} + \dots,$$

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

See the link below for a list of known values of (α, β) for W_{80}^I .

- [W₈₀^I known parameters](#) (from [1–9])

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](https://arxiv.org/abs/1912.11758).
- [2] J. Gildea, R. Taylor, A. Kaya, and A. Tylyshchak. Double bordered constructions of self-dual codes from group rings over Frobenius rings. *Cryptogr. Commun.*, 12(4):769–784, 2020. doi: [10.1007/s12095-019-00420-3](https://doi.org/10.1007/s12095-019-00420-3).
- [3] J. Gildea, A. Korban, A. Kaya, and B. Yildiz. Constructing self-dual codes from group rings and reverse circulant matrices. *Adv. Math. Commun.*, 15(3):471–485, 2021. doi: [10.3934/amc.2020077](https://doi.org/10.3934/amc.2020077).
- [4] 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](https://doi.org/10.1016/j.ffa.2021.101876).
- [5] J. Gildea, A. Korban, and A. M. Roberts. New binary self-dual codes of lengths 80, 84 and 96 from composite matrices. *Des. Codes Cryptogr.*, 90(2):317–342, 2022. doi: [10.1007/s10623-021-00976-3](https://doi.org/10.1007/s10623-021-00976-3).
- [6] T. A. Gulliver and M. Harada. Classification of extremal double circulant self-dual codes of lengths 74–88. *Discrete Math.*, 306(17):2064–2072, 2006. doi: [10.1016/j.disc.2006.05.004](https://doi.org/10.1016/j.disc.2006.05.004).
- [7] 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.
- [8] A. M. Roberts. Self-dual codes from a block matrix construction characterised by group rings, 2023. (in submission).
- [9] N. Yankov, D. Anev, and M. Gürel. Self-dual codes with an automorphism of order 13. *Adv. Math. Commun.*, 11(3):635–645, 2017. doi: [10.3934/amc.2017047](https://doi.org/10.3934/amc.2017047).