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ERRATUM

Erratum to: On the support designs of extremal binary doubly even self-dual codes

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Several errors in the original publication of this article are noted. It has been corrected in this erratum.

Theorem 4.2

In the proof of Theorem 4.2, the computation of $\frac{F(63,4\cdot 63+4;[0,2,4,6,8,10,12,14])}{10321920}$ is incorrect. We exchange "Let D'' be a self-orthogonal ... (page 535, line 5 up)" to

Let D'' be a self-orthogonal 8-$(24m, 4m+4, \lambda_8)$ design, where $\lambda_8 = \binom{5m-2}{m-1}\frac{(4m-1)(4m-2)(4m-3)}{(24m-5)(24m-6)(24m-7)}$. We set $A_s^u = \sum_{i=0}^{4m+4}(i)_s n_i^u = (u)_s\lambda_s$ for $0 \le s \le 8$. For the design D'', we have

$$F(m,u;[x_1,x_2,x_3,x_4,x_5,x_6,x_7,x_8]) = \sum_{i=0}^{4m+4}(i-x_1)(i-x_2)\dots(i-x_8)n_i^u$$
$$= \sum_{\theta=0}^{8}(-1)^\theta\sigma_{\theta,8}\left(\sum_{h=0}^{8-\theta}S(8-\theta,h)A_h^u\right).$$

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Then, we have $n_{16}^u = \frac{F(m,u;[0,2,4,6,8,10,12,14])}{10321920} - 9n_{18}^u - 45n_{20}^u - \cdots - \binom{2m+2}{8} n_{4m+4}^u$. Put $u = 4m + 8$. In the case $m = 63$, by a computation using Magma and Mathematica, we have

$$\frac{F(63, 4\cdot 63 + 8; [0, 2, 4, 6, 8, 10, 12, 14])}{10321920}$$
$$= 434770089631707918854018240665532556501024465610694949208950056700860112516 15/4.$$

Hence $n_{16}^{4\cdot 63+8}$ is not an integer. Therefore, if $m = 63$, there is no self-orthogonal 8-$(24m, 4m + 4, \lambda_8)$ design.

Thus Theorem 4.2 is correct.

Theorem 4.3

For Theorem 4.3, we examined again by using Magma and Mathematica. Then we found some errors.

In Theorem 4.3 (1), in the set {58, 90, 113} should be 58.

In Theorem 4.3 (2), the set {10, 79, 93, 118, 120, 123, 125, 142} should be {10, 23, 79, 93, 118, 120, 123, 125, 142}. The set {79, 93, 118, 120, 123, 125, 142} should be {23, 79, 93, 118, 120, 123, 125, 142}.