SUPPLEMENTARY DOCUMENTS FOR "A NEW FAMILY OF MAXIMUM ADDITIVE SYMMETRIC RANK-DISTANCE CODES"

In our submission, the proof of Theorem 1.2 consists of several complicated computations. For the convenience of referees, we provide three Maple programs to verify these calculations in our proof.

In all maple files, we use a_i to represent $b_0^{q^i}$, use b_i to represent $b_1^{q^i}$ and use c_i to represent $(\eta b_2)^{q^i}$.

1. Proof of Theorem 1.2 with $k = 3$.

File 1: k=3.mw

- The expansion of $\det(M_1)$, i.e. (5) in our paper, is verified via (2) in File 1.
- The expansion of $\det(M_2)$, i.e. (6) in our paper, is verified via (4) in File 1.

2. Proof of Theorem 1.2 with $k = 4$.

File 2: k=4.mw

- The expansion of $\det(M_1)$ is verified via (2) in File 2.
- The simplification of the expression of $\det(M_1)$, i.e. (8) in our paper, is verified via the expansion of A_1, see (4) and (5) in File 2.
- Equation (12) in our paper is obtained via a simplified expression of
$$4\left(b_1^{q^6+q^5+q^2+q}(\eta b_2)^{q^4+1} + C_1D_1 - C_1F_1 - C_1G_1\right)$$
in (8). This process is verified via the expansion of B_1 and D_1, see (8) and (9) in File 2.
- The expansion of $\det(M_2)$ is verified via (11) in File 2.
- The simplification of the expression of $\det(M_2)$, i.e. (9) in our paper, is verified via the expansion of A_2, see (13) and (14) in File 2.
- Equation (13) in our paper is obtained via a simplified expression of
$$4\left(A_2B_2D_2/C_2 - A_2D_2 - B_2D_2 + C_2D_2\right)$$
in (9) of our paper. This process is verified via the expansion of B_2 and D_2, see (17) and (18) in File 2.

3. Proof of Theorem 1.2 with $k = 5$.

File 3: k=5.mw

- The expansion of $\det(M_1)$ is verified via (2) in File 3.
- The simplification of the expression of $\det(M_1)$, i.e. (19) in our paper, is verified via the expansion of A_1, see (4) and (5) in File 3.
- Equation (24) in our paper is obtained via a simplified expression of
$$4(H_1 - D_1)(A_1 - B_1 - C_1 - E_1 + F_1 + G_1 + I_1 - J_1)$$

in (22) of our paper. This computation is verified via the expansion of B_1 and D_1, see (8) and (9) in File 3.

- The expansion of $\det(M_2)$ is verified via (11) in File 3.
- The expansion of $\det(M_3)$ is verified via (13) in File 3.
- The simplification of the expression of $\det(M_3)$, i.e. (25) in our paper, is verified via the expansion of A_3, see (15) and (16) in File 3.