

# Correction to “Achieving the Welch Bound with Difference Sets”

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On page 1905 of our work [1], inequality (32) is incorrect because the term  $1 - 2N^{-1/(K-1)}$  can be negative, for example, when  $N = 71$  and  $K = 35$ . In such cases, inequality (29) makes no contribution to the final composite bound (28). Therefore, inequality (32) should be replaced by the following expression

$$\delta \leq \min \left\{ \sqrt{\frac{N(K-1)}{K(N-1)}}, \sqrt{1 - \left[ \max(0, 1 - 2N^{-\frac{1}{K-1}}) \right]^2} \right\}. \quad (1)$$

On page 1903 of [1], one line above equation (20), “let  $q = p^r = 3 \pmod{4}$  be a power of prime” should be replaced by “let  $q = 3 \pmod{4}$  be a prime”. The next sentence “Lemma 2 is thus only a special case of this family when  $r = 1$ .” should be removed.

#### REFERENCES

- [1] P. Xia, S. Zhou and G. B. Giannakis, “Achieving the Welch Bound with Difference Sets,” *IEEE Transactions on Information Theory*, vol. 51, no. 5, pp. 1900-1907, May 2005.