1030-94-161 **Sunghyu Han** (sunghyu@yonsei.ac.kr), Department of Mathematics, University of Louisville, Louisville, KY 40292, and **Jon-Lark Kim*** (jl.kim@louisville.edu), Department of Mathematics, University of Louisville, Louisville, KY 40292. *Formally self-dual additive codes over* $\mathbb{F}_4$.

We introduce a class of formally self-dual additive codes over $\mathbb{F}_4$ as a natural analogue of binary formally self-dual codes, which is missing in the study of additive codes over $\mathbb{F}_4$. We define extremal formally self-dual additive codes over $\mathbb{F}_4$ and classify all such codes. Interestingly, we find exactly three formally self-dual additive $(7, 2^7)$ odd codes over $\mathbb{F}_4$ with minimum distance $d = 4$, a better minimum distance than any self-dual additive $(7, 2^7)$ codes over $\mathbb{F}_4$. We further define near-extremal formally self-dual additive codes over $\mathbb{F}_4$ as an analogue of near-extremal binary formally self-dual codes, and prove that they do not exist if their lengths are $n = 16, 18$ or $n \geq 20$. (Received August 03, 2007)