998-05-54 **Vassil Y Yorgov*** (vyorgov@uncfsu.edu), 1200 Murchison Rd, Department of Math & Computer Science, Fayetteville State University, Fayetteville, NC 28301. *Self-Dual Binary Codes of Length 104 and Minimum Distance 18.*

It is known that the minimum distance d of a binary self-dual $[n, n/2, d]$ code is bounded by

$$d \leq \begin{cases} 4\lfloor \frac{n}{24} \rfloor + 6, & \text{if n} \equiv 22 \pmod{24}; \\ 4\lfloor \frac{n}{24} \rfloor + 4, & \text{otherwise.} \end{cases}$$

A self-dual code meeting this bound is called extremal. A self-dual code with all weights divisible by four is called doubly-even. A self-dual code that is not doubly-even is called singly-even. The self-dual binary codes are completely classified up to the length 32.

No extremal singly even codes of length 104 are known (with d=20). The best-known singly even self-dual code for this length has minimum distance 16. It is known that a singly-even code with d=18 exists, but the prove is unconstructive. On the other hand the well-known extended quadratic residue code of length 104 is a doubly even and extremal.

In this work we present an explicit construction of self-dual [n,n/2,d-2] codes from a given self-dual [n,n/2,d] code. Then we apply this construction to the known doubly even extremal code of length 104 and obtain 12 inequivalent singly-even self-dual [104,52,18] codes. These codes are the best known singly-even codes for that length.

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