1003-05-555 **Joshua W Baron*** (`jbaron@berkeley.edu`), 19 Hillside Court, Berkeley, CA 94704, and **Jeffrey L Ginn** (`ginn1jl@cmich.edu`), 6780 Rattalee Lake Roud, Clarkston, MI 48348. *On an exhaustive search for $(2^m - 1, 2^{m-1} - 1, 2^{m-2} - 1)$ cyclic difference sets where $m = 12$.*. Preliminary report.

Cyclic difference sets have applications in communications technology and cryptology. To date, all cyclic difference sets with parameters $(2^m - 1, 2^{m-1} - 1, 2^{m-2} - 1)$ have been found for $m \leq 10$. For $m \geq 8$, the search involves significant computing time. We will present partial results on our exhaustive search for cyclic difference sets with these paremeters when $m = 12$. The work uses character theory and the homomorphic images of the cyclic group $\mathbb{Z}_{4095}$, sifting carefully through the lattice of subgroups in order to reduce the computational complexity of the problem. (Received September 22, 2004)