Classification of t-balanced regular Cayley maps on some groups

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In this talk, we will consider t-balanced regular Cayley maps on semidirect product of $\mathbb{Z}_n$ and $\mathbb{Z}_2$. It is well-known that any semidirect product of $\mathbb{Z}_n$ and $\mathbb{Z}_2$ is isomorphic to the group $\langle a, b \mid a^n = b^2 = 1, \ ba = a^r b \rangle$ for some r satisfying $r^2 \equiv 1 \pmod{n}$. We denote this group by $\Gamma(n, r)$. If $r = 1$ and -1, then $\Gamma(n, r)$ is isomorphic to $\mathbb{Z}_n \times \mathbb{Z}_2$ and dibedral group of order $2n$, respectively. For a positive integer $n = 4m$ divided by 4, if $r = 2m - 1$, then $\Gamma(n, r)$ is called semi-dihedral group. For dihedral groups and semi-dihedral groups, t-balanced regular Cayley maps on these groups were classified in [1] and [2]. In this talk, for arbitrary r satisfying $r^2 \equiv 1 \pmod{n}$, we consider the classification of t-balanced regular Cayley maps on $\Gamma(n, r)$.

References

[1] J. H. Kwak, Y. S. Kwon, R. Feng, A classification of regular t-balanced Cayley maps on dihedral groups. *European J. Combin.* **27(3)** (2006) 382–392.

[2] J. M. Oh, A classification of regular t-balanced Cayley maps on semi-dihedral groups. *J. Combin. Theory Ser. B* **99** (2009) 480–493.