ORTHOGONAL GROUPS OVER LAURENT POLYNOMIALS

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Based on the classical presentation of Carmichael

$$\begin{aligned} Alt(m+2) &= \ < a_1, a_2, ..., a_m | \ a_k^3 = e \ \ (1 \leq k \leq m)\,, \\ (a_k a_l)^2 &= \ e \ \ (1 \leq k < l \leq m) > , \end{aligned}$$

of the alternating groups with generating set its 3-cycles $a_i = (12i)$, we introduced in 1982 the class of groups defined by the symmetric presentation

$$\begin{aligned} Y(m,n) &= \ < a_1, a_2, ..., a_m | \ a_k^n = e \ \ (1 \leq k \leq m)\,, \\ \left(a_k^i a_l^i\right)^2 &= \ e \ \left(1 \leq k < l \leq m, \, 1 \leq i \leq \frac{n}{2}\right) > \end{aligned}$$

which we conjectured then to be always finite. Morevover, we showed for $m \geq 3$ and $n \geq 5$ odd, that these groups mapped onto orthogonal groups in characteristic 2 . We will discuss recent work on the generalization of this class to groups $Y\,(m)$, excluding the torsion condition $a_k^n = e$, and about their representations as orthogonal groups over Laurent polynomial rings in characteristic 2.

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