

Constructing Bieberbach groups from a quotient of the orbit braid group

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For $n \geq 3$, $B_n^{orb}/[P_n, P_n]$ is a crystallographic group of dimension $n(n-1)$ with the holonomy group $(Z_2)^n \rtimes \Sigma_n / Z((Z_2)^n \rtimes \Sigma_n)$. We can analyze the torsions and the conjugacy classes of its elements. For the situations where holonomy groups are cyclic groups of order 2^u and the nonabelian group $(Z_2)^{2^r} \rtimes Z_{2^r} / <((-1, \dots, -1), 1)>$, we can construct the corresponding Bieberbach groups and discuss the properties of the corresponding flat manifolds.