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Title:	Split metacyclic actions on surfaces
Authors:	Dhanwani, Neeraj K. (/jspui/browse?type=author&value=Dhanwani%2C+Neeraj+K.) Rajeevsarathy, Kashyap (/jspui/browse?type=author&value=Rajeevsarathy%2C+Kashyap) Sanghi, Apeksha (/jspui/browse?type=author&value=Sanghi%2C+Apeksha)
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Abstract:	Let $\text{Mod}(S_g)$ be the mapping class group of the closed orientable surface S_g of genus $g \geq 2$. In this paper, we derive necessary and sufficient conditions under which two torsion elements in $\text{Mod}(S_g)$ will have conjugates that generate a finite split non-abelian metacyclic subgroup of $\text{Mod}(S_g)$. As applications of the main result, we give a complete characterization of the finite dihedral and the generalized quaternionic subgroups of $\text{Mod}(S_g)$ up to a certain equivalence that we will call weak conjugacy. Furthermore, we show that any finite-order mapping class whose corresponding orbifold is a sphere, has a conjugate that lifts under certain finite-sheeted regular cyclic covers of S_g . Moreover, for $g \geq 5$, we show the existence of an infinite dihedral subgroup of $\text{Mod}(S_g)$ that is generated by an involution and a root of a bounding pair map of degree 3. Finally, we provide a complete classification of the weak conjugacy classes of the non-abelian finite split metacyclic subgroups of $\text{Mod}(S_3)$ and $\text{Mod}(S_5)$. We a
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