Some algebraic properties of homeomorphism groups

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Abstract

Let M be a topological, metrizable manifold possibly with boundary. Let $\mathcal{H}_c(M)$ denote the path connected identity component of the group of all compactly supported homeomorphisms of a manifold M. The purpose of our poster is to present some results describing the algebraic structure of the group $\mathcal{H}_c(M)$ and of its universal covering $\mathcal{H}_c(M)^\sim$. E.g. it is shown that under a mild assumptions on M the group of question is perfect and simple. In the case of manifold with boundary some similar results are shown for a subgroup of $\mathcal{H}_c(M)$ consists of all elements that can be joined with the identity by compactly supported isotopies stabilizing on the boundary. Next, conjugation invariant norms on $\mathcal{H}_c(M)$ are considered and the boundedness of $\mathcal{H}_c(M)$ and its subgroups is studied. In the case of universal covering group $\mathcal{H}_c(M)^\sim$ there are shown some properties concerning perfectness and boundedness. In the latter case the obtained result is related with the notion of fragmentation norm.

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