Mathematics > Algebraic Topology

Topological and uniform structures on universal covering spaces

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We discuss various uniform structures and topologies on the universal covering space $\widetilde X$ and on the fundamental group $\pi_1(X,x_0)$. We introduce a canonical uniform structure $CU(X)$ on a topological space X and use it to relate topologies on $\widetilde X$ and uniform structures on $\widetilde{CU(X)}$.

Using our concept of universal Peano space we show connections between the topology introduced by Spanier and a uniform structure of Berestovskii and Plaut. We give a sufficient and necessary condition for Berestovskii-Plaut structure to be identical with the one generated by the uniform convergence structure on the space of paths in X. We also describe when the topology of Spanier is identical with the quotient of the compact-open topology on the space of paths.

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