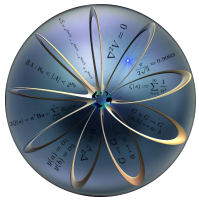

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homeotopy

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Let X be a topological Hausdorff space. Let $\mathrm{Homeo}(X)$ be the group of homeomorphisms $X \to X$, which can be also turn into a topological space by means of the compact-open topology. And let π_k be the k-th homotopy group functor.

Then the **k-th homeotopy** is defined as:

$$\mathcal{H}_k(X) = \pi_k(\mathrm{Homeo}(X))$$

that is, the group of homotopy classes of maps $S^k \to \mathrm{Homeo}(X)$. Which is different from $\pi_k(X)$, the group of homotopy classes of maps $S^k \to X$.

One important result for any low dimensional topologist is that for a surface F

$$\mathcal{H}_0(F) = \mathrm{Out}(\pi_1(F))$$

which is the F's extended mapping class group.

Reference

G.S. McCarty, *Homeotopy groups*, Trans. A.M.S. 106(1963)293-304.