

## Groups Of Homotopy Classes Rank Formulas And Homotopy Commutativity

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### Groups Of Homotopy Classes Rank

This invariant, called the rank of a group, is a generalisation of the rank of a finitely generated abelian group. It tells whether or not the groups considered are finite and serves to distinguish two infinite groups. We express the rank of subgroups of  $[A, nX]$  and of  $C(Y)$  in terms of rational homology and homotopy invariants.

### Groups of Homotopy Classes - Rank formulas and homotopy ...

Groups of Homotopy Classes Rank formulas and homotopy-commutativity. Authors: Arkowitz, M., Curjel, C. R. Free Preview

### Groups of Homotopy Classes - Rank formulas and homotopy ...

Groups of Homotopy Classes Rank formulas and homotopy-commutativity. Authors; M. Arkowitz; C. R. Curjel

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Get this from a library! Groups of homotopy classes : rank formulas and homotopy-commutativity. [Martin Arkowitz; Caspar R Curjel] -- Many of the sets that one encounters in homotopy classification problems have a natural group structure. Among these are the groups  $[A, nX]$  of homotopy classes of maps of a space  $A$  into a loop-space ...

### Groups of homotopy classes : rank formulas and homotopy ...

Groups of finite rank --The groups  $[A, ? X]$  and their homomorphisms --Commutativity and homotopy-commutativity --The Rank of the group of homotopy equivalences. Series Title: Lecture Notes in Mathematics, 4. Responsibility: by M. Arkowitz, C.R. Curjel.

### Groups of Homotopy Classes : Rank formulas and homotopy ...

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Its first homotopy group ( $\pi_1$ ) is the group of directed loops starting and ending at a predetermined point (e.g. its center). It is equivalent to the free group of rank 2, which is not commutative: looping around the leftmost cycle and then around the rightmost cycle is different than looping around the rightmost cycle and then looping around the leftmost cycle.

### **Homology (mathematics) - Wikipedia**

The homotopy class of  $(f_1, f_2)$  is denoted by  $[f_1, f_2]$ .  $(f_1, f_2)$  is called a homotopy equivalent morphism or simply a homotopy equivalence, if there is a morphism  $(g_1, g_2)$  such that  $(g_1, g_2) \circ (f_1, f_2) = (\text{id}_{X_1}, \text{id}_{X_2})$  and  $(f_1, f_2) \circ (g_1, g_2) = (\text{id}_{Y_1}, \text{id}_{Y_2})$ . In this case,  $(g_1, g_2)$  is called a homotopy inverse of  $(f_1, f_2)$ .

### **Certain subgroups of groups of self-pair homotopy ...**

Definition. The term mapping class group has a flexible usage. Most often it is used in the context of a manifold  $M$ . The mapping class group of  $M$  is interpreted as the group of isotopy-classes of automorphisms of  $M$ . So if  $M$  is a topological manifold, the mapping class group is the group of isotopy-classes of homeomorphisms of  $M$ . If  $M$  is a smooth manifold, the mapping class group is the group of ...

### **Mapping class group - Wikipedia**

In the mathematical field of algebraic topology, the fundamental group of a topological space is the group of the equivalence classes under homotopy of the loops contained in the space. It records information about the basic shape, or holes, of the topological space. The fundamental group is the first and simplest homotopy group. The fundamental group is a homotopy invariant—topological spaces ...

### **Fundamental group - Wikipedia**

Groups of finite rank.- The groups  $[A, ? X]$  and their homomorphisms.- Commutativity and homotopy-commutativity.- The Rank of the group of homotopy equivalences. Series Title: Lecture notes in mathematics (Springer-Verlag), 4. Responsibility: [by] M. Arkowitz [and] C.R. Curjel.

### **Groups of homotopy classes; rank formulas and homotopy ...**

Additional Physical Format: Groups of homotopy classes : rank formulas and homotopy-commutativity / M. Arkowitz, C.R. Curjel,... Berlin : Springer, 1967

### **Groups of homotopy classes : rank formulas and homotopy ...**

Additional Physical Format: Online version: Arkowitz, Martin. Groups of homotopy classes. Berlin, New York, Springer-Verlag, 1964 (OCoLC)651774425

### **Groups of homotopy classes; rank formulas and homotopy ...**

In mathematics, specifically in homotopy theory, a classifying space  $BG$  of a topological group  $G$  is the quotient of a weakly contractible space  $EG$  (i.e. a topological space all of whose homotopy groups are trivial) by a proper free action of  $G$ . It has the property that any  $G$  principal bundle over a paracompact manifold is isomorphic to a pullback of the principal bundle  $EG \rightarrow BG$ .

### **Classifying space - Wikipedia**

Euler class groups and motivic stable cohomotopy ... and  $E$  is a rank  $d$  vector bundle on  $X$ . By means of the dictionary of Serre [Ser55], one views this ... homotopy classes of maps  $[M, S^n]$  admits a (functorial) abelian group structure; this set is called the  $n$ -th cohomotopy group of  $M$ . The Hopf classification theorem [Hop33] states that if  $\dim M < n$  ...

### **Euler class groups and motivic stable cohomotopy**

The group  $\text{Out}(F, n)$  is the group of homotopy classes of self-homotopy equivalences of a finite connected graph  $X$  of rank  $n$ , and  $\text{Aut}(F, n)$  is the basepointed version of this, the homotopy classes of homotopy equivalences of  $X$  fixing a basepoint, where homotopies are also required to fix the basepoint.

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### **Representation Theory of Finite Groups and Associative ...**

Then the homotopy category of  $C$  is the category whose class of objects is the same as the class of objects of  $C$  but the set of morphisms from an object  $x$  to an object  $y$  is the set of the homotopy classes of morphisms from  $x$  to  $y$  in  $C$ . For example, a map is a homotopy equivalence if and only if it is an isomorphism in the homotopy category.

### **Glossary of algebraic topology - Wikipedia**

Singular cohomology. Singular cohomology is a powerful invariant in topology, associating a graded-commutative ring to any topological space. Every continuous map  $f: X \rightarrow Y$  determines a homomorphism from the cohomology ring of  $Y$  to that of  $X$ ; this puts strong restrictions on the possible maps from  $X$  to  $Y$ . Unlike more subtle invariants such as homotopy groups, the cohomology ring tends to be ...

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