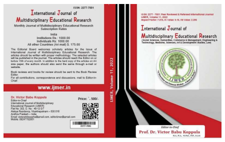
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DOI: http://ijmer.in.doi./2022/11.12.96
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INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881; IMPACT FACTOR :8.017(2022); IC VALUE:5.16; ISI VALUE:2.286
Peer Reviewed and Refereed Journal: VOLUME:11, ISSUE:12(5), December: 2022
Online Copy of Article Publication Available (2022 Issues)
Scopus Review ID: A2B96D3ACF3FEA2A
Article Received: 2nd December 2022
Publication Date:10th January 2023
Publisher: Sucharitha Publication, India
Digital Certificate of Publication: www.ijmer.in/pdf/e-CertificateofPublication-IJMER.pdf

STUDIES ON THE HOMOTOPY THEORY BASED ON HOMOLOGICAL GROUPS

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ABSTRACT:

The logical study of situations where maps have homologies between them is known as homotopic theory. The idea has also been applied to algebraic geometry and category theory, in addition to algebraic topology. This study will employ Homotopic Theory, homological invariants of topological and geometrical objects. The main focus of this paper is on the homotopic or homological nature of several structures that appear in conventional inquiries about groups, Lie rings, and group rings. The (generalised) dimension subgroups contain intricate combinatorial theories, as is well known. In this work, demonstrate that, in some circumstances, these theories' complexity on the homotopic hypothesis. The non-additive functors' derived functors, Problems stated in strictly group-theoretical terms naturally include homotopy groups of spheres, group homology, etc.

INTRODUCTION:

The main category in which we shall deal in this essay is groups. In certain situations, lie rings over integers will have an impact on it. Because of this, "group theory" will simply refer to an existence (mostly functorial) within the category of groups for us. We won't define the homotopy pattern as a concept. [1] The word "pattern" alone has a number of connotations. It is used in many different philosophical contexts and is frequently understood intuitively. Attempting to define it is possible after reading this essay. It can be viewed as either a set of relations or a system of signs developed from homotopy theory.[1] A first course in logarithmic geography, at least the ones I'm familiar with, often gets understudies to the point where they can determine homology instantly. Building the hypothesis behind it is then largely left to the weight of the course, in terms of characterizing solitary homology, confirmation of the harder Eilenberg-Steenrod maxima, cell chains, and everything else required to demonstrate that the outcome is fundamentally independent of the definitions. A later course usually then takes up the subject of homotopy hypothesis itself, which is more difficult to master and generally more difficult to promote. This has a few drawbacks, such as leaving a discussion of Eilenberg-Maclane spaces and the related research of cohomology activities far out in the distance. However, rather than seeking to examine it long haul, it provides useful gear to persons who are clients of the idea. Many later sources (for example, Tom Dieck's recent book) appear to accept the view that, from a strictly logical standpoint, a firm foundation in homotopy hypothesis kicks things off. [2] .The pattern of homotopy, Picking a structure like a group, group ring, Lie ring, or universal enveloping algebra, we will think about specific substructures and their intersection, take its quotient by some obvious fraction, and notice that frequently, this quotient contains homotopical or homological elements. An apparent piece is not uniformly defined; instead, it is often the intersection's largest substructure built using a particular type of operation (for example, it is not an intersection itself). Usually, the intersection of substructures is a less explicit construction than the obvious component. You might think of the left-hand side of the formula () as "implicity modulo explicity," or you can create a hierarchy of the explicity and calculate the quotients of its terms [4]. The homotopy theory linked with groups and their homotopy theoretic analogues provides a wealth of study opportunities and is closely related to current and classical tendencies in homotopy theory and algebra. New approaches in homotopy theory and algebra make the topic more accessible than before. This research is primarily concerned with the homotopy theory of finite groups. Given agroup G, the topic of research is its p-completed classifying space - an object with an exceedingly rich and sophisticated homotopy structure that depends solely on the group under investigation. These spaces share a close relationship with the recently popularised pcompact group-loop spaces with finite mod-p homology and p-complete classifying spaces.- but they bring a whole new set of intriguing difficulties. We intend to provide a lexicon of homotopy theoretic terms for group theoretic ideas [3]. The resulting new nomenclature will encompass homotopy representations, homotopy group extensions, and other group theoretic counterparts.

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G. Baciu et al. [1] Mathematical displaying and computational portrayals of shapes have been dependent upon serious exploration for over thirty years. Strangely, these subjects are currently at the core of a consistent action of innovative work in PC illustrations, virtual conditions, picture based delivering, PC supported mathematical plan and actual recreations. M. Bendersky et al. [2] Church [Homological dependability for setup spaces of manifolds] utilized portrayal dependability to demonstrate that the space of setups of particular unordered places in a shut complex show sane homological steadiness. A subsequent confirmation was likewise given by Randal-Williams [Homological security for unordered design spaces] utilizing move maps. We give a third verification of this reality utilizing confinement and objective homotopy hypothesis. Hurewicz et al. [3] One could argue that the discovery of the Hopf map in 1930 was the catalyst for the development of homotopy hypothesis. Since I began working with Norman Steenrod as a former student at Chicago in 1939 and obtained my Ph.D. in 1941, I have been active in the field for all save the first ten years that it has existed. The current record of the subject's improvement is then based on it. generally, on my own memories

W. Jian-hua et al. [4] The standard and the fundamental qualities of hereditary calculation (GA) were expressed. Hybrid was a primary cycle delivering new age through hereditary qualities Recombination throughout the entire GA research area. The degree and impact of interaction among administrators was however constrained by some conventional hybrid systems. There were a few thorny problems, for example, hybrid effectiveness gradually, some administrator destruction no possibility crossing, the populace variety making light of rapidly and so on.

Xiuyu et al. [5] The related nonlinear nonconvex programming issue (P) is the focus of this study. g(x)=(g 1 (x), g 2 (x),...,g m (x)) T, 1,2,..., min f(x) s.t.g(x)0 g(x) If the practicable set is constrained, associated, and makes the argument that the limit isn't absolutely straight-free at this time, we propose the consolidated homotopy strategy to take care of this issue by building new imperative capabilities and a joined homotopy condition.

Wei Zeng et al. [6] Homotopy bunch assumes a part in computational geography with a principal significance. Each homotopy identicalness class contains a boundless number of circles. Finding a standard delegate inside a homotopy class will work on numerous computational errands in computational geography, for example, circle homotopy location, pants decay. Moreover, the authoritative delegate can be utilized as the shape descriptor.

L. Netto et al. [7] Somewhat recently, versatile limitless span motivation reaction channels (IIR) have been concentrated as a potential option in contrast to versatile limited length drive reaction (FIR) channels. Probably the most popular methodologies for versatile IIR sifting incorporate the result mistake (OE), The Steiglitz-McBride computations (SM) and the condition error (EE) are two examples. The OE and EE calculations are used as the foundation for the homotopy continuation planning (HCM) of the SM versatile calculation in this study plans.

Z. Koldovsky et al. [8] A quick calculation to tackle weighted ℓ 1 - minimization issues with N × N square "estimating" lattices is proposed. The method follows a homotopy way that iterates over the arrangements of the improvement sub-undertakings in the request for 1 through N. It is recursive in model request. As a result, it responds to every model request and completes this task more quickly than the other analyzed strategies.

J. Von Raumer et al. [9] The investigation of uniformity types is key to homotopy type hypothesis. Portraying these sorts is frequently precarious, and different systems, for example, the encode-interpret strategy, have been created. We demonstrate a hypothesis about balance sorts of equalizers and pushouts, suggestive of an enlistment standard and with next to no limitations on the truncation levels.

J. Zhang et al. [10] The purported picture enrolment is to find an ideal spatial change to such an extent that the changed layout picture becomes like the reference picture however much as could reasonably be expected. A few halfway differential conditions (PDEs) based variational strategies can be utilized for deformable picture enlistment, for the most part contrasting in how regularization for misshaping fields.

EXPERIMENTATION:

The introduce a homotopy theory of digraphs (directed graphs) and establish its basic properties as well as links to the homology theory of digraphs that the authors have developed in previous works. We particularly show that digraph homologies are homotopy invariant and that the basic group and initial homology group of the digraph are related. A complete subclass of digraphs can be used to naturally identify the category of (undirected) graphs. As a result, we also obtain homology and homotopy theories for graphs that are consistent [11-12].

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Define and describe the fundamental characteristics of digraph homotopy groups in this paragraph. We introduce the concept of a path-map in a digraph G and describe a fundamental group of G to achieve this. After that, it is possible to deduce that the fundamental group of the associated iterated loop-digraph is the higher homotopy group. A based digraph G is one that has a Fixed base vertex is referred to as VG. A based digraph map is one with the formula f () = and has the digraphs f: G H.D will stand for based digraphs as a group. With the additional criterion that F: In =, a homotopy between two based digraph mappings

Construction of π_0

Allow G∗ to be a based digraph, and V ∗2 = Let 0 and 1 represent a based digraph with two vertices, no edges, and a base vertex of 0. Assume that Hom (V2, G) is the configuration of based digraph maps from V2 to G. Keep in mind that the positioning of such maps corresponds to the positioning of the vertices in the digraph G.

Definition 1:

In order to determine whether In I and a digraph map exist, we claim that two digraph maps, Hom (V 2, G), are equivalent.

$$f : In \rightarrow G,$$

with the ultimate goal of f(0) = 1 and f(n) = (1). The connection is unmistakably an identicalness connection, which is shown by [] for the component's proportionality class and by 0(G) for the arrangement of classes of equality with the base point, which is determined by a class of identicalness of the insignificant guide V2 G. The arrangement of the linked pieces of the digraph G matches the set "0(G)". specifically, the digraph G connected to the condition 0(G) =.

Definition 2:

The set π0(G∗) harmonizes with the arrangement of associated parts of the digraph G. Specifically, the digraph G∗ associated if π0(G∗) = ∗.

C-homotopy and π_1

For any line digraph In ∈ In, a built-in digraph I'll always start with a base of 0..

Definition 3:

Any digraph map that begins with In G, where In In, is a way map in a digraph G. A constructed route map with regard to a based digraph G is a based digraphmap: I in G, or a digraph route with the objective that (0) =. A circle on G is a based way map when I in G to the point where (n) = (n).

Keep in mind that the digraph G doesn't necessarily need to show a route map.

Definition 4:

A map of digraphs: If h (0) = 0, h(n) = m, and h(I) h(j) at any position where I j (i.e., if h as a capability from 0 to n to 0 to m is 1), then In Im is said to be contracting. droning expanding).

Any contracting h: In Im is a based digraph map by definition. Additionally, because h is surjective, each edge of Ipreimage m's consists just of one edge of In. In addition, basically, we have m and on the off chance that n = m, h is a bijection.

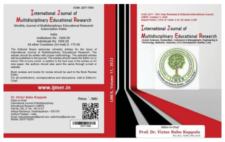
Definition 5:

Take into account based on two path-maps A contracting map h: In Im provides a one-step direct C-homotopy from to such an extent that the guidance F: VCh VG provided from Ch to G, is a digraph map. We suggest a one-step reverse if the equivalence is true and Ch is replaced by Ch everywhere. C-homotopy.

Result & Discussion:

Localized C-homotopy description

Here, we present specialised findings that have a self-supported relevance for work with C-homotopies. That connection among geography and gatherings allows mathematicians to apply experiences from bunch hypothesis to geography. For instance, assuming that two topological items have different homotopy gatherings, they can not have a similar topological construction — a reality that might be challenging to demonstrate utilizing just topological means. For instance, the torus is not quite the same as the circle: the torus has a "opening"; the circle doesn't. Nonetheless, since progression (the fundamental thought of geography) just arrangements with the nearby construction, it very well may be hard to characterize the undeniable worldwide distinction officially. The homotopy gatherings, be that as it may, convey data about the worldwide construction [13-17].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Lemma 1: Let a and b be two vertices in a digraph G, such that a →b → a follows from the same word. At that moment, any route map would be: Specifically in → G, so that (I) = a,

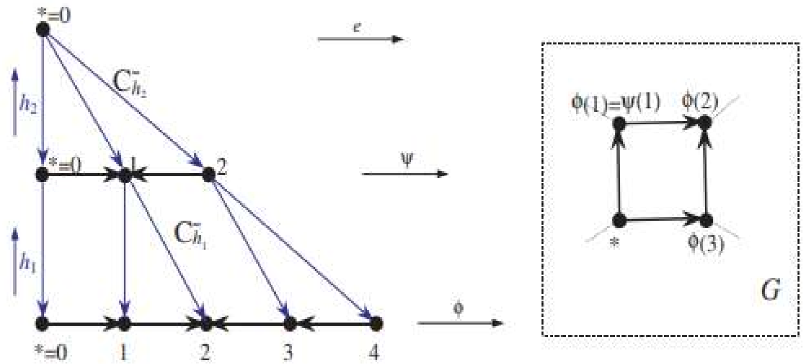

Figure 1: The circle of a square is C-configurable. You should be aware that (0) = (4) = (0) = (2) *

(I + 1) = b, and I I + 1 In, is C-homotopic to a way map with the following formula: In G, where In is obtained from In by translating one edge from I I + 1 to I + 1 I, and (j) = j for all j = 0,..., n.

Proof: The accompanying diagram shows how a C-homotopy between and is formed in two one-step reverse C-homotopies. graph:

$$\begin{array}{lccccccc}
\phi' : I_{n'} \to G & \dots & \underset{a}{i} & \leftarrow & \underset{b}{i+1} & \dots & & \\
 & & \downarrow & \searrow & & \searrow & & \\
\psi : I_{n+1} \to G & \dots & \underset{a}{i} & \to & \underset{a}{i+1} & \leftarrow & \underset{b}{i+2\dots} & \\
 & & \uparrow & & \uparrow & \nearrow & & \\
\phi : I_n \to G & \dots & \underset{a}{i} & \to & \underset{b}{i+1} & \dots & &
\end{array}$$

The addendum under every component of the line digraph exemplifies the value of the circle on this part. Anyhow, map: G characterises a series of its vertices by vi = 0 where vi = (I). We have one of the accompanying relations for every I = 0,..., n 1 in terms of a way map.

In the event that φ is a based way map, we have v0 = ∗, in the event that φ is a circle, v0 = ∗ = vn. We consider θφ as a word over the letter set VG.

Lemma 2: Let f: G: Ha and g: G: Hb represent two maps of based digraphs. If f g: G H, then there is a based way map: Ik Ha with (k) = b, with the end goal being that we get for any circle: In G

$$\gamma_\sharp (f \circ \phi) \overset{C}{\simeq} g \circ \phi.$$

Thusly, The graph that follows is commutative:

$$\begin{array}{ccc}
\pi_1(G^*) & \xrightarrow{\pi_1(f)} & \pi_1(H^a) \\
\downarrow^{\mathrm{id}} & & \downarrow^{\gamma_\sharp} \\
\pi_1(G^*) & \xrightarrow{\pi_1(g)} & \pi_1(H^b)
\end{array}$$

Proof: Note that f ∘ φ is a circle in Ha and g ∘ φ is a circle in Hb. It gets the job done to demonstrate the assertion for the situation when f and g are connected by a one-step homotopy, or at least, f (x) →−=g (x) for all x ∈ VG. Specifically, we have a→−=b.

Consider the way map γ : I → H given by γ (0) = an and γ (1) = b. Then, the circle γ (f ∘ φ) : ˆI ∨ In ∨ I → Hb is characterized by

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$$\gamma_{\sharp}(f \circ \phi) = \hat{\gamma} \vee (f \circ \phi) \vee \gamma.$$

Characterize contracting h : ˆI ∨ In ∨ I → In the following: h on In is indistinguishable, and h plans the endpoints of I to the corresponding endpoints of

$$\begin{array}{ccccccccc} I_n & & & 0 & \dots & \dots & n & & \\ \uparrow^h & & \nearrow & \uparrow & \dots & \dots & \uparrow & \nwarrow & \\ \hat{I} \vee I_n \vee I & -1 & \leftarrow & 0 & \dots & \dots & n & \rightarrow & n+1 \end{array}$$

where we count the vertices of ˆI ∨ In ∨ I as {−1, 0, ..., n + 1} . Then, we have, for 0 ≤ I ≤ n,

$$\gamma_{\sharp}(f \circ \phi)(i) = f(\varphi(i)) \rightrightarrows g(\phi(i)) = (g \circ \varphi)(h(i)),$$

for I = −1

$$\gamma_{\sharp}(f \circ \phi)(-1) = b = g(\varphi(0)) = (g \circ \varphi)(h(-1)),$$

for I = n + 1

$$\gamma_{\sharp}(f \circ \phi)(n+1) = b = g(\varphi(n)) = (g \circ \varphi)(h(n+1)).$$

Thus, for all I,

$$\gamma_{\sharp}(f \circ \phi)(i) \rightrightarrows (g \circ \varphi)(h(i)),$$

Relation between H_1 and π_1

In this paper of Algebraic Topology, we have concentrated on basic gatherings have knowledge of pointed topological spaces and have witnessed the emergence of simplicial and lone homology gatherings of topological spaces. An inquiry positively emerges, whether any connection exists between essential gathering of a space and any of its homology bunch. We can not anticipate that they should be equivalent, since, homology bunches are abelian yet key gatherings may not.

In this module, we will discover that for way associated spaces, there generally exists a homomorphism from essential gathering onto its most memorable homology bunch. This homomorphism is known as Hurewicz homomorphism. In addition, it can likewise be laid out that the abelianization of the essential gathering of a way associated space is mathematically same with the principal homology gathering of the space.

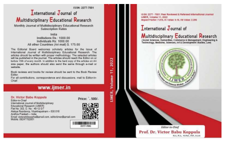
We currently talk about the procedure of abelianization of any gathering. One might take note of that abelianization is basically a functor from the class Grp to the classification Ab. One of our primary outcomes is the accompanying hypothesis.

Presently we wish to lay out the connection somewhere in the range of Π1(X) and H1(X) for any way associated space. We should underline the word 'way associated' before we continue any further.

Since, except if the space is way associated, regardless of whether the basic gathering is abelian, we can not expect its equality with the primary homology bunch. (Crucial, as a matter of fact bunch in such case especially rely upon the base point and consequently not one of a kind). For example, on the off chance that we accept the space as a disjoint association of two circles, its basic gathering is the limitless cyclic gathering Z, however its most memorable homology bunch is Z ⊕ Z. Subsequently, by a space in this module we generally mean a way associated space.

A homomorphism is obvious from the way that λ is a homomorphism. It can now be checked that such η is the reverse of ψ. This shows that ψ : Π1(X)ab → H1(X) is an isomorphism. Consequently, for a way associated topological space, first Homology bunch and the abelianization of its principal bunch are same.

Hurewicz Theorem really gives an association between speculation of key gatherings, called homotopy gatherings, and the homology gatherings. In our course, we had no degree for talking about the higher homotopy gatherings thus, couldn't express the overall adaptation of Hurewicz Theorem here. Nonetheless, Hurewicz Theorem is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International Journal of Multidisciplinary Educational Research
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incredibly valuable and has enormous application in higher aspect This follows through with our tasks on Algebraic Topology.

Theorem 3: We have an isomorphism for any based associated digraph G.

$$\pi_1(G^*)\,/[\pi_1(G^*),\pi_1(G^*)] \cong H_1(G,\mathbb{Z})$$

Proof: The confirmation is like that in the old style arithmetical geography. For any based circle φ: I∗n → G∗ of a digraph G∗, describe a 1-wayχ(φ) on G as follows: χ(φ) = 0 for n = 0, 1, 2, and for n ≥ 3.

$$\chi(\phi) = \sum_{\{i: i\to i+1\}} e_{\phi(i)\phi(i+1)} - \sum_{\{i: i+1\to i\}} e_{\phi(i+1)\phi(i)},$$

where the summation document I runs from 0 to n − 1. Seeing that is straightforward the 1-way χ (φ) is allowed and closed and, hence, concludes a homology class [χ (φ)] ∈ H1 (G, Z). Permit us first to exhibit that, for any two based circles φ: I∗n → G∗ and ψ: I∗m → G∗,

$$\phi \overset{C}{\simeq} \psi \;\;\Rightarrow\;\; [\chi(\phi)] = [\chi(\psi)]\,.$$

Note that any based circle with n ≤ 2 is C-homotopic to miserable. For n ≥ 3, it is sufficiently to hoping to be that φ Cψ is given by a one-step direct C-homotopy with a contracting map h : I∗n → I∗m. Set.

$$\phi' := \psi \circ h : I_n^* \to G^*$$

furthermore, see that by (4.12) χ (φ) = χ (ψ). It stays to show that [χ (φ)] =[χ (φ)] .

In acting from In to G, the digraph maps and are homotopic. Specifically, refer to Sn as the cycle digraph that is obtained from In by ID of the vertices 0 and n. Then, and can be seen as digraph mappings from Sn to G, and they are again homotopic in accordance with this. Think about the basic homology class E ∈ H1 (Sn) given by

$$\phi_*(\varpi) = \chi(\varphi) \quad \text{and} \quad \phi'_*(\varpi) = \chi(\phi')\,.$$

Then again, by Theorem 3.3 states that [φ∗] Equals [φ∗], concluding the proof of

Thus, χ decides a guide

$$\chi_*: \pi_1(G^*) \to H_1(G,\mathbb{Z}), \quad \chi_*[\phi] = [\chi(\phi)].$$

The guide χ∗ is a gathering homomorphism in light of the fact that, We have ([e]) = 0 and for based circles, and the unbiased component [e] 1 (G)

$$\begin{aligned}\chi_*([\phi]\cdot[\psi]) &= \chi_*([\phi\vee\psi]) = [\chi(\phi\vee\psi)]\\ &= [\chi(\phi)+\chi(\psi)] = [\chi(\phi)] + [\chi(\psi)] = \chi_*([\phi]) + \chi_*([\psi]).\end{aligned}$$

Since the gathering H1(G, Z) is abelian, that's what it follows

$$[\pi_1(G^*),\pi_1(G^*)] \subset \operatorname{Ker}\chi_*.$$

That's what presently let us demonstrate χ∗ An epimorphism is Describe a normal G circle as a limited succession v = {vk}nk=0 of vertices of G to such an extent that v0 = vn and, for any k = 0, ..., n − 1, either vk → vk+1 or vk+1 → vk. For a standard circle v characterize a 1-way.

CONCLUSIONS:

- This paper employs Homotopy Theory, homological invariants of topological and geometrical objects.
- The homotopical or homological character of several structures that emerge in traditional questions regarding groups, Lie rings, and group rings has been presented in this work.

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REFERENCES:

1. G. Baciu and T. L. Kunii, "Homological invariants and holorgraphic portrayals of topological designs in cell spaces," Proceedings Computer Graphics International 2000, 2000, pp. 89-97, doi: 10.1109/CGI.2000.852324.
2. M. Bendersky and J. Mill operator, "Limitation And Homological Stability Of Configuration Spaces," in Quarterly Journal of Mathematics, vol. 65, no. 3, pp. 807-815, Sept. 2014, doi: 10.1093/qmath/hat039.
3. Hurewicz, Witold ,Beitrage zur Topologie der Deformationen, Nederl. Akad. Wetensch. Proc. Ser. A 38 (1935), 112-119, 521-528; 39(1936), 117-126,215-224.
4. W. Jian-hua, C. Jun-ming and W. Dai-hua, "Concentrate on Parameter Inversion of Displacement Based on Homotopy Theory Genetic Algorithms," 2008 International Symposium on Computational Intelligence and Design, 2008, pp. 313-317, doi: 10.1109/ISCID.2008.142.
5. Xiuyu Wang, Xingwu Jiang, Taishan Yang and Q. Liu, "The homotopy inside point strategy for tackling a class of nonlinear nonconvex programming issues," 2010 third International Conference on Advanced Computer Theory and Engineering (ICACTE), 2010, pp. V1-45-V1-49, doi: 10.1109/ICACTE.2010.5579065.
6. Wei Zeng, Miao Jin, Feng Luo and X. D. Gu, "Sanctioned homotopy class agent utilizing exaggerated structure," 2009 IEEE International Conference on Shape Modelling and Applications, 2009, pp. 171-178, doi: 10.1109/SMI.2009.5170145.
7. S. L. Netto and P. Agathoklis, "A homotopy continuation planning for the Steiglitz-McBride versatile calculation," Proceedings of IEEE International Symposium on Circuits and Systems - ISCAS '94, 1994, pp. 57-60 vol.2, doi: 10.1109/ISCAS.1994.408904.
8. Z. Koldovsky and P. Tichavsky, "A homotopy recursive-in-model-request calculation for weighted Lasso," 2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 2014, pp. 4151-4155, doi: 10.1109/ICASSP.2014.6854383.
9. N. Kraus and J. von Raumer, "Way Spaces of Higher Inductive Types in Homotopy Type Theory," 2019 34th Annual ACM/IEEE Symposium on Logic in Computer Science (LICS), 2019, pp. 1-13, doi: 10.1109/LICS.2019.8785661.
10. J. Zhang, K. Chen and B. Yu, "Proficient Homotopy Method for Total Variation Image Registration," 2013 International Conference on Computer Sciences and Applications, 2013, pp. 655-658, doi: 10.1109/CSA.2013.159.
11. Priyavrat Deshpande, Samirshukla,Anuragsingh (2022),"Distance R-Domination Number And R-Independence Complexes Of Graphs", European Journal of Combinatorics, Vol.102.
12. AgustíRoig (2022), "Up-to-homotopy algebras with strict units, Journal of Pure and Applied Algebra", Vol. 226, No.6.
13. Federico Castillo,José Alejandro Samper (2021), "Finiteness theorems for matroid complexes with prescribed topology, European Journal of Combinatorics,Vol. 92, 103239.
14. MarcLevine, YapingYang, Gufang Zhao (2021), "Algebraic elliptic cohomology and flops II: SL-cobordism, Advances in Mathematics, Vol.384, 107726.
15. Kevin IvánPiterman,Stephen D.Smith (2021), "Eliminating components in Quillen's conjecture, Journal of Algebra.
16. DanielGrady, HishamSati (2021), "Differential cohomotopy versus differential cohomology for M-theory and differential lifts of Postnikov towers, Journal of Geometry and Physics", Vol.165,104203.
17. BrunoStonek (2020), "Higher topological Hochschild homology of periodic complex K-theory, Topology and its Applications", Vol.282, 107302.