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The functors \overline{W} and $\text{Diag} \circ \text{Nerve}$ are simplicially homotopy equivalent. (English)

Zbl 1186.55011

J. Homotopy Relat. Struct. 3, No. 1, 359-378 (2008).

Let G be a simplicial group. There are two well-known classifying simplicial set constructions: (1) Kan's classifying simplicial set $\overline{W}G$ and (2) dimensionwise application of the nerve functor for groups yields a bisimplicial set NG , to which one can apply the diagonal functor to obtain a simplicial set $\text{Diag } NG$.

It is well-known that $\overline{W}G$ is weakly homotopy equivalent to $\text{Diag } NG$. In this article, the author proves that $\overline{W}G$ is a strong simplicial deformation retract of $\text{Diag } NG$. This gives a stronger relationship between $\overline{W}G$ and $\text{Diag } NG$.

Reviewer: [Jie Wu \(Singapore\)](#)

MSC:

55U10 Simplicial sets and complexes in algebraic topology

18G30 Simplicial sets; simplicial objects in a category (MSC2010)

Keywords:

[simplicial group](#); [classifying simplicial set](#); [bisimplicial set](#)

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