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A category representing Bredon cohomology for a G-space

Bredon-Illman cohomology with local coefficients for spaces with an action of a compact Lie group was defined by Mukherjee and Mukherjee in 1996. However, the definition is rather involved, which makes it difficult to prove general results about it. More recently, Farsi, Scull and Watts have shown that this cohomology is Morita invariant, making it a suitable homotopy invariant for orbifolds. They also slightly reformulated the definition. I will use this reformulated description to construct a category $\Delta_G(X)$ for each G-space which represents the Bredon cohomology with both constant and local coefficients for this space in the sense that the cohomology of the nerve with coefficient functor factoring through the discrete tom Dieck fundamental groupoid is the Bredon-Illman cohomology of the G-space with these coefficients. I will discuss some properties of this category and derive results about Bredon-Illman cohomology that can now easily be obtained. This is joint work with Laura Scull from Fort Lewis College.