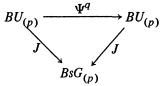
TWO PROOFS OF THE STABLE ADAMS CONJECTURE

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Let p and q be distinct primes. The complex Adams conjecture establishes a homotopy commutative diagram



where J is the complex J-homomorphism and $_{-(p)}$ denotes localization at p. Both J and Ψ^q are infinite loop maps, and it is natural to ask whether this result is infinitely deloopable; that is, whether $J\Psi^q=J$ as infinite loop maps. This is the Stable Adams Conjecture.

We announce here two independent proofs of this conjecture. Details will appear in [2] and [6].

METHOD 1. Our proof is based upon a "geometric" criterion for pairs of maps into the spectrum $(BsG)^{\wedge} \cong (BsG)_{(p)}$ to be homotopic, where ()^ denotes the Bousfield-Kan \mathbb{Z}/p -completion functor. We exploit the "galois symmetry" of $(kU)^{\wedge}$ [8] to show that J^{\wedge} , $J^{\wedge} \circ (\Psi^q)^{\wedge}$ satisfy this criterion.

We impose a Quillen closed model category structure on Segal's Γ -spaces [3], whose weak equivalences are level-wise weak equivalences of spaces. For any "suitably oriented, pointed C. W.-like space" X (e.g., X any pointed C. W. complex with no orientation specified), we obtain a Γ -space BsG_X arising from distinguished homotopy equivalences of iterated smash products of X with itself. There is a natural functor

$$\Phi$$
: Ho Γ-spaces \longrightarrow HoSpectra

sending $\mathcal{B}sG_{S^2}$ to $\Phi(\mathcal{B}sG_{S^2}) = \mathbf{B}s\mathbf{G}$.

Our basic representability theorem is a description of the functor

$$\operatorname{Hom}_{\operatorname{Ho}\Gamma\operatorname{-spaces}}(\ , \mathcal{B}sG_X)$$

as being isomorphic to the functor sX() of "oriented X-structures" over a variable Γ -space as base. For sufficiently nice X (e.g., $X=S^2$), $\operatorname{Hom}_{\operatorname{Ho}\Gamma\text{-spaces}}(,(\mathcal{B}sG_X)^*)$ is isomorphic to $\mathbb{Z}/psX()$ (the theory of "oriented, \mathbb{Z}/p -completed X-structures"). The critical property of these X-structures is that they admit a functorial principal-

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