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| Autore | Adams J. Frank (John Frank) |
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| Nota di contenuto | 1. Introduction -- 2. Primary operations. (Steenrod squares, Eilenberg-MacLane spaces, Milnor’s work on the Steenrod algebra.) -- 3. Stable homotopy theory. (Construction and properties of a category of stable objects.) -- 4. Applications of homological algebra to stable homotopy theory. (Spectral sequences, etc.) -- 5. Theorems of periodicity and approximation in homological algebra -- 6. Comments on prospective applications of 5, work in progress, etc. |
| Sommario/riassunto | Before I get down to the business of exposition, I'd like to offer a little motivation. I want to show that there are one or two places in homotopy theory where we strongly suspect that there is something systematic going on, but where we are not yet sure what the system is. The first question concerns the stable J-homomorphism. I recall that this is a homomorphism J: ~ (SQ) ~ ~S = ~ + (Sn), n large. r r r n It is of interest to the differential topologists. Since Bott, we know that ~ (SO) is periodic with period 8: r 6 8 r = 1 2 3 4 5 7 9· . · Z o o o z On the other hand, ~S is not known, but we can nevertheless r ask about the behavior of J. The differential topologists prove: 2 Th~~: If I' = ~ - 1, so that 'IT"r(SO) ~ 2, then J('IT"r(SO)) = 2m where m is a multiple of the denominator of ~/4k th (l\. being in the Pc Bepnoulli numher.) Conject~~: The above result is best possible, i.e. J('IT"r(SO)) = 2m where m 1s exactly this denominator. status of conJectul'e ~ No proof in sight. Q9njecture Eo If I' = 8k or 8k + 1, so that 'IT"r(SO) = Z2' then J ('IT"r(SO)) = 2 , 2 status of conjecture: Probably provable, but this is |

work in progl'ess.