## 962-55-1362 Jeffrey H. Smith\* (jhs@math.purdue.edu). An obstruction theory for constructing spherical fibrations with a give Euler class. Preliminary report.

Let X be a connected space and let  $\alpha \in H^*X$  be an integral cohomology class. The question arises; is  $\alpha$  the Euler class of spherical fibration with base X? Adem-Smith have dealt with a special case. If multiplication by  $\alpha$  is periodic for all local coefficient systems then  $\alpha$  is an Euler class and if multiplication by  $\alpha$  is eventually periodic for all local coefficient systems then some cup power of  $\alpha$  is an Euler class. The results of Adem-Smith can be refined to give an obstruction theory for the problem of realizing  $\alpha$  as an Euler class. The interest lies in the description of the obstruction groups. They are a kind of "local" homology of X,  $H_{\alpha}X$ . These groups sit in a short exact sequence

Image 
$$\to H_{\alpha}X \to \operatorname{Ker}$$

where Image and Ker are respectively the image and kernel of multiplication by  $\alpha$ . (Received October 03, 2000)