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Title: Characteristic classes of manifold bundles over spheres

Abstract: Manifold bundles with fiber M are classified by the classifying space of it diffeomorphism group Diff(M). Hence, the cohomology of this classifying space is the ring of characteristic classes for manifold bundles. In this talk I will describe which rational characteristic classes are attained by manifold bundles over spheres. As applications, this allows to investigate the question, which classes of the (rational) oriented cobordism ring contain a representative fibering over the sphere and one can deduce the existence of many fiber bundles where base and fiber both admit positive scalar, Ricci and even sectional curvature, whereas the total space does not.