1043-55-80  Samuel B. Smith* (smith@sju.edu), Department of Mathematics, Saint Joseph’s University, Philadelphia, PA 19131. Gauge groups and related structures in rational homotopy theory. Preliminary report.

Let $G$ be a connected Lie group and $P \to X$ a principal $G$-bundle over a compact, metric space $X$. We determine the rational H-type of the gauge group $G(P)$. We also prove two related results. Given a complex matrix bundle $\xi: M_n \to E \to X$ with space of sections $A_\xi$, we determine the rational H-type of the group $UA_\xi$ of unitaries of this $C^*$-algebra. We also determine the rational H-type of the monoid $\text{Aut}(\xi)$ of fibre self-equivalences of a fibration $\xi$ of simply connected spaces with fibre a homogeneous space $G/H$ with $H \subseteq G$ a closed subgroup of maximal rank. This is joint work with various coauthors: Y. Félix, J. Klein, G. Lupton, C. Phillips and C. Schochet. (Received August 18, 2008)