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*C\*-algebras, gauge groups, and rational homotopy*

Let  $\zeta$  be a principal  $PU_n$ -bundle with associated  $n$ -dimensional complex matrix bundle over a compact metric space  $X$  and let  $A_\zeta$  denote the unital  $C^*$ -algebra of sections of this bundle. We determine the rational  $H$ -homotopy type of  $UA_\zeta$ , the group of unitaries of  $A_\zeta$ . The answer turns out to be independent of the bundle  $\zeta$  and depends only upon the rational cohomology of  $X$ . We prove analogous results for the gauge group and the projective gauge group of a principal bundle over  $X$  with structure group a connected topological group.

This is joint work with N. C. Phillips and John Klein.