1041-55-191   **F. R. Cohen*** (`cohf@math.rochester.edu`), Department of Mathematics, University of Rochester, Rochester, NY 14627, **A. Adem**, Department of Mathematics, University of British Columbia, Vancouver, B. C. V6T 1Z4, Canada, and **E. Torres**, Department of Mathematics, Ann Arbor, MI 48109. *Spaces of homomorphisms and spaces of representations.* Preliminary report.

The structure of certain spaces of (i) homomorphisms and (ii) representations for certain discrete groups in Lie groups are addressed. Let Γ^q denote the q-th stage of the descending central series of the free group on n generators F_n. For each q and every topological group G, a simplicial space $B_*(q, G)$ is constructed where $B_n(q, G) = Hom(F_n/\Gamma^q, G)$ and the realizations $B(q, G) = |B_*(q, G)|$ filter the classifying space BG. One special case consists of spaces of commuting n-tuples in a Lie group G, while a second case addresses similar spaces of representations.

The main topics are as follows. (1) In favorable case, these spaces spaces admit geometrically defined stable decompositions. (2) Connections to the structure of Lie groups as well as properties of finite groups and the cohomology of groups are developed. (3) Examples for transitively commutative groups are given in detail. (Received August 11, 2008)

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