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Spaces of commuting elements in Lie groups

Spaces of group homomorphisms $Hom(\pi, G)$ from a discrete group to a Lie group have been studied in various contexts. We study the space of pairwise commuting n-tuples, i.e. π is free abelian, in a compact and connected Lie group G, from the topological viewpoint. We will describe a way to stabilize spaces of homomorphisms by introducing an infinite dimensional topological space, reminiscent of a Stiefel variety, that assembles the spaces of commuting tuples into a single space. Hilbert-Poincare series will be also described, in addition to other properties.