**MAXIME BERGERON**, University of British Columbia

*The Topology of Representation Spaces*

Let $\Gamma$ be a finitely generated group and let $G$ be a reductive complex linear algebraic group (e.g. $\mathrm{SL}_n\mathbb{C}$). The representation space $\mathrm{Hom}(\Gamma, G)$ carved out of a finite product of copies of $G$ by the relations of $\Gamma$ has many interesting topological features. From the point of view of algebraic topology, these features are easier to understand for the compact subspace $\mathrm{Hom}(\Gamma, K) \subset \mathrm{Hom}(\Gamma, G)$ where $K$ is a maximal compact subgroup of $G$ (e.g. $\mathrm{SU}_n$). Unfortunately, the topological spaces $\mathrm{Hom}(\Gamma, G)$ and $\mathrm{Hom}(\Gamma, K)$ usually have very little to do with each other; for instance, some of the connected components of $\mathrm{Hom}(\Gamma, G)$ may not even intersect $\mathrm{Hom}(\Gamma, K)$! In this talk, I will discuss exceptional classes of groups $\Gamma$ for which $\mathrm{Hom}(\Gamma, G)$ and $\mathrm{Hom}(\Gamma, K)$ happen to be homotopy equivalent, thereby allowing one to compute otherwise inaccessible topological invariants.