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Non-abelian convexity of based loop groups

If K is a compact, connected, simply connected Lie group, its based loop group ΩK is endowed with a Hamiltonian $S^1 \times T$ action, where T is a maximal torus of K . Atiyah and Pressley examined the image of ΩK under the moment map μ , while Jeffrey and Mare examined the corresponding image of the real locus ΩK^τ for a compatible anti-symplectic involution τ . Both papers generalize well known results in finite dimensions, specifically the Atiyah-Guillemin-Sternberg theorem, and Duistermaat's convexity theorem. In the spirit of Kirwan's convexity theorem, I have generalized the two aforementioned results by demonstrating convexity of ΩK and its real locus ΩK^τ in the full non-abelian regime, resulting from the Hamiltonian $S^1 \times K$ action. In particular, this is done by appealing to the Bruhat decomposition of the algebraic (affine) Grassmannian, and appealing to the "highest weight polytope" results for Borel-invariant varieties of Guillemin and Sjamaar and Goldberg.