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Title: Dimensional reduction approach to superintegrable $\mathcal{PT}$-symmetric systems

Abstract: An extension of the Marsden-Weinsten reduction is applied to the geodesic motion in a complex homogeneous space for obtaining superintegrable $\mathcal{PT}$-invariant systems on the n-dimensional sphere. The main objects in this technique are the complexified maximal Abelian subalgebras of the special unitary group. The transformations associated with them allow us to distinguish the "ignorable" coordinates that the reduction procedure eliminates. Additionally, the integrals of the generated systems are the reduced element on the invariant subspace in the corresponding enveloping algebra. Examples at one and two dimensions are described at the quantum level, providing new systems with real spectra or $\mathcal{PT}$-symmetry breaking.