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Geometry of invariant domains in complex semi-simple Lie groups

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Abstract. We investigate the joint action of two real forms of a semi-simple complex Lie group $U^{\mathbb{C}}$ by left and right multiplication. After analyzing the orbit structure, we study the CR structure of closed orbits. The main results are an explicit formula of the Levi form of closed orbits and the determination of the Levi cone of generic orbits. Finally, we apply these results to prove q -completeness of certain invariant domains in $U^{\mathbb{C}}$.

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