

Invariant Kähler potentials and symplectic reduction

PETER HEINZNER AND BERND STRATMANN

Abstract. For a proper Hamiltonian action of a Lie group G on a complex Kähler manifold X with momentum map μ we show that the symplectic reduction $\mu^{-1}(0)/G$ is a normal complex Kähler space. As an essential ingredient of the proof we show that in a G -stable neighborhood of a point in $\mu^{-1}(0)$ we have a G -invariant Kähler potential for ω . This result is of independent interest and we also examine the existence of invariant potentials away from $\mu^{-1}(0)$ with both positive and negative results.

Mathematics Subject Classification (2020): 53D20 (primary); 32U10 (secondary).