

# Kähler reduction by a complex Lie group

Shing Tak Lam

July 17, 2023

Let  $M$  a Kähler manifold,  $G$  a compact Lie group acting on  $M$ , with

1.  $G$  acting on  $M$  in a Hamiltonian way, with moment map  $\mu : M \rightarrow \mathfrak{g}^*$ ,
2.  $G$  acting on  $M$  isometrically.
3.  $G$  acting freely on  $\mu^{-1}(0)$ .

Then we have that  $\mu^{-1}(0)/G$  is a Kähler manifold. Suppose  $G^{\mathbb{C}}$  is a complexification of  $G$ .