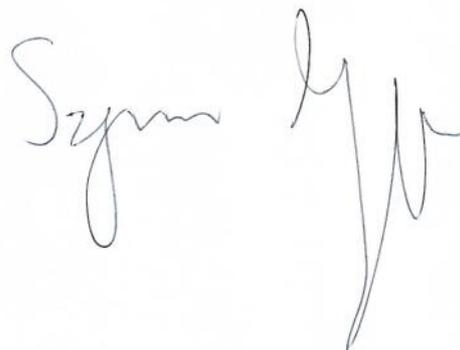


## Abstract

In this thesis we try to shed some light on the connections between the symplectic geometry and the pluripotential theory of compact Kähler manifolds with holomorphic Hamiltonian torus actions. In particular we derive a formula connecting the volume form of the compact Kähler manifold with the volume forms on compact Kähler orbifolds coming from Marsden-Weinstein reduction. Moreover, we investigate the  $g$ -Monge-Ampère equation introduced by Berman and Witt Nyström and show the existence and uniqueness of its solutions in the special case of toric varieties. We also highlight the connection between this complex Monge-Ampère-type equation and the real optimal transportation theory.

A handwritten signature in black ink, appearing to read "Szymon L. W." with a stylized, cursive flourish at the end.