GROUP ACTIONS ON SYMPLECTIC MANIFOLDS: THE FULL STATEMENT OF THEOREM 32.3

Consider a Hamiltonian action of a torus T on a compact symplectic manifold X. Let T_1 be the stabilizer group of $x \in X$.

The inclusion of T_1 in T dualizes to give a linear mapping, $\pi \colon \mathfrak{t}^* \to t_1{}^*$. Let $\alpha_1, \ldots, \alpha_n$ be the weights of the representation of T_1 on the tangent space of $x \in X$. Let $S(\alpha_1, \ldots, \alpha_n)$ be the convex region

$$S(\alpha_1, \ldots, \alpha_n) = \{\sum_{i=1}^{n} s_i \alpha_i \ , \ s_i \geq 0\}$$

in $\mathfrak{t}_1{}^*$, and let

$$S'(\alpha_1, \ldots, \alpha_n) = \pi^{-1} S(\alpha_1, \ldots, \alpha_n)$$

in $\mathfrak{t}^*$.

Then there exists a neighbourhood U of x in X and a neighbourhood U' of $p = \Phi(x)$ in $\mathfrak{t}^*$ such that

$$\Phi(U) = U' \cap (p + S'(\alpha_1, \ldots, \alpha_n)). \tag{0.1}$$