Let (M, ω) be a compact symplectic manifold of dimension $2n$. Suppose that a compact torus acts effectively on (M, ω) in a Hamiltonian way. These spaces are also called complexity k spaces, where the complexity k is given by n minus the dimension of the torus. It is well known that complexity zero spaces admit an invariant Kähler structure. It turns out that this also holds for a specific class of complexity one spaces which are positive monotone (the latter can be seen as the symplectic analog of the Fano condition in algebraic geometry).
More precisely, in this talk we focus on positive monotone complexity one spaces which are tall. We will show that in each dimension there are just finitely many of such spaces up to isomorphisms and that the torus action can be extended to a complexity zero action. In particular, each positive monotone and tall complexity one space is symplectomorphic to a smooth Fano variety. This is joint work with Silvia Sabatini and Daniele Sepe.