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Alvaro Pelayo* (apelayo@umich.edu), 530 Church Street, 2074 East Hall, Mathematics Department, University of Michigan, Ann Arbor, MI 48109. *Symplectic actions of tori on four manifolds.*

We classify symplectic actions of 2-dimensional tori on compact connected symplectic 4-manifolds, when at least one 2-dimensional orbit is a Lagrangian submanifold. An analogous classification also holds for tori and symplectic manifolds of arbitrary dimension, which extends the theory of Atiyah, Guillemin-Sternberg, Delzant, and Benoist to non-Hamiltonian symplectic actions.

Precisely, we assign to each of our symplectic manifolds with torus action a list of invariants. Then we show that two of our manifolds are equivariantly symplectomorphic if and only if they have the same invariants associated to them, this being the content of the uniqueness part of the classification. The existence part of the classification consists of proving that starting from an abstract list of ingredients, which play the role of the invariants, and which depend *only* on the torus, we can construct a symplectic manifold with torus action whose list of invariants is precisely the abstract list of ingredients that we started with. This part is joint work with J.J. Duistermaat.

Time permitting, additional work of the author completing the previous classification in lower dimensions will be given. (Received August 14, 2006)