SYMPLECTIC PACKINGS IN COTANGENT BUNDLES OF TORI

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Abstract. Finding optimal packings of a symplectic manifold with symplectic embeddings of balls is a well known problem. In the following, an alternate symplectic packing problem is explored where the target and domains are $2n$-dimensional manifolds which have first homology group equal to $\mathbb{Z}^n$ and the embeddings induce isomorphisms of first homology. When the target and domains are $\mathbb{T}^n \times V$ and $\mathbb{T}^n \times U$ in the cotangent bundle of the torus, all such symplectic packings give rise to packings of V by copies of U under $\mathrm{GL}(n, \mathbb{Z})$ and translations. For arbitrary dimensions, symplectic packing invariants are computed when packing a small number of objects. In dimensions 4 and 6, computer algorithms are used to calculate the invariants associated to packing a larger number of objects. These alternate and classic symplectic packing invariants have interesting similarities and differences.