NON-NEGATIVELY CURVED MANIFOLDS WITH MAXIMAL SYMMETRY RANK IN LOW DIMENSIONS

We show that a closed, simply-connected, non-negatively curved 5-manifold admitting an (almost) effective, isometric T^3 action is diffeomorphic to one of $S^5, S^3 \times S^2$ or $S^3 \widetilde{\times} S^2$. If we allow only T^2 symmetry, the Wu manifold $SU(3)/SO(3)$ may also occur and we conclude that the corresponding manifold is diffeomorphic to any of these four. As a direct consequence, we can show that for any manifold, of dimensions up to and including 9 under the same hypotheses, the maximal symmetry rank is equal to $\left[\frac{2n}{3}\right]$ and the free rank is less than or equal to one half that value.

This is joint work with Fernando Galaz-García.