Catherine Searle
(Wichita State University)

The maximal symmetry rank conjecture for non-negatively curved manifolds

The maximal symmetry rank conjecture states:

Conjecture *Let T^k act isometrically and effectively on M^n, a closed, simply connected, non-negatively curved Riemannian manifold. Then*

1. $k \leq \lfloor 2n/3 \rfloor$;
2. *When $k = \lfloor 2n/3 \rfloor$, M^n is equivariantly diffeomorphic to*

$$Z = \prod_{i \leq r} S^{2n_i+1} \times \prod_{i > r} S^{2n_i}, \quad \text{with } r = 2\lfloor 2n/3 \rfloor - n,$$

or the quotient of Z by a free linear action of a torus of rank less than or equal to $2n$ mod 3.

In particular, we have shown that for isotropy-maximal torus actions the conjecture holds. I'll discuss the proof of this result as well as some consequences regarding the classification of manifolds of non-negative curvature with maximal and almost maximal symmetry rank in low dimensions.

This is joint work with Christine Escher.