

KARSTEN GROVE
(UNIVERSITY OF NOTRE DAME)

Advances in Positive Curvature

Some open problems

1. Do all the 7-dimensional candidates produced in the classification work on cohomogeneity one manifolds with positive curvature with Wilking and Ziller indeed support such metrics?
2. Is the first in this list diffeomorphic to the unit tangent bundle of the 4-sphere (It has the same cohomology ring and it supports indeed a metric with positive curvature)?
3. Do all nontrivial 3-sphere bundles over the 4-sphere admit a positively curved metric?
4. Classify positively curved 4-manifolds with circle symmetry up to equivariant diffeomorphism (are they all linear actions on S^4 and CP^2 ?).
5. Are there obstructions on a finite group to be the fundamental group of a positively curved manifold?
6. Is a positively curved manifold with a totally geodesic hypersurface diffeomorphic to the sphere or the real projective space?