ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

5. Differential Geometry and Global Analysis

1991 MS Classification: 53 A 15, 53 B 21

Scharlach, Christine, Technische Universität Berlin, Germany

Affine Hyperspheres

For a non-degenerate hypersurface immersion $f\colon M^n \to I\!R^{n+1}$ there is a unique choice of a transversal field, the affine (or Blaschke) normal ξ, which is invariant under the group of equiaffine transformations, $\{x \mapsto Ax + b \mid b \in I\!R, A \in Sl(n+1, I\!R)\}$. If all affine normals $\xi(p)$, $p \in M^n$, pass through a fixed point, then the hypersurface is called a proper affine hypersphere.
In analogy to an inequality of Chern for Riemannian submanifolds, we have found a new (intrinsic) inequality for affine hyperspheres (and more general for definite centroaffine hypersurfaces). It is optimal and we will report on the classification of affine hyperspheres for which the corresponding equality is assumed. The results are obtained in joint work with L. Vrancken, M. Kriele, U. Simon and L. Verstraelen.