HIGHER CODIMENSION ISOPERIMETRIC PROBLEMS

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In this talk I will present a joint work with R. Mazzeo and F. Pacard on the
construction of constant mean curvature submanifolds of arbitrary codimension in
compact Riemannian manifolds with generic metrics. Our result is a generalisation
of the theorem by R. Ye [8], which constructs families of CMC hypersurfaces which
are small perturbations of geodesic spheres centered at nondegenerate critical points
of the scalar curvature and a more recent paper of F. Pacard and X. Xu [6] where
such hypersurfaces are obtained near critical points of another curvature invariant.

In arbitrary codimension, building on ideas of Almgren [1], we define CMC
submanifolds to be boundaries of submanifolds which are critical points of a certain
energy. Using the techniques introduced in [6], we construct such submanifolds near
the nondegenerate critical points of a functional, which we call the partial scalar
curvature and which is defined on the Grassmanian bundle of the ambient manifold
and coincides with the scalar curvature in the case of codimension one.

REFERENCES

123-126.
[3] D. Hoffman, Surfaces in constant curvature manifolds with parallel mean curvature vector
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