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CMC hypersurfaces condensing to geodesic segments and rays in Riemannian manifolds

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Abstract. We construct examples of compact and one-ended constant mean curvature surfaces with large mean curvature in Riemannian manifolds with axial symmetry by gluing together small spheres positioned end-to-end along a geodesic. Such surfaces cannot exist in Euclidean space, but we show that the gradient of the ambient scalar curvature acts as a ‘friction term’ which permits the usual analytic gluing construction to be carried out.

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