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Simon P Morgan* (sphmorgan@hotmail.com), Department of Mathematics MS-136, Rice University, 6100 Main Street, Houston, TX 77005. *Which cones have minimal surface foliations?* Preliminary report.

The cone of any surface other than the sphere has a topological singularity at the apex where it fails to be a manifold. Also cones can naturally have curvature singularities at their apex where the solid angle differs from the solid angle around a point in Euclidean space. Using cut and paste techniques on euclidean 3 space we can construct the cone of any topological surface so that it inherits a minimal surface foliation from the original 3 space. We adapt the use of calibration to show that the inherited foliating surfaces are still minimal. Thus we show that there is no topological obstruction to foliating the cone of surface by minimal surfaces. We examine the possibility of singular curvature providing geometric obstructions to foliating cones by minimal surfaces. There are geometric structures on cones which prevent foliation by minimal surfaces. However if there is a product metric structure, in a weak sense, then the cone can also be foliated by minimal surfaces. Our construction above satisfies these conditions. The converse is also considered; can any cone that can be foliated by minimal surfaces be given this type of product metric structure? (Received September 29, 2000)