

**Meeting:** 1003, Atlanta, Georgia, SS 11A, AMS Special Session on Riemannian Geometry, I

1003-53-618            **William P. Minicozzi\*** (minicozz@jhu.edu), Math Dept., JHU, 3400 N. Charles St., Baltimore, MD 21218. *The Calabi-Yau Conjectures for embedded surfaces.*

I will discuss the proof of the Calabi-Yau conjectures for embedded minimal surfaces. This is joint work with Toby Colding.

The original form of these conjectures was given in 1965 by E. Calabi:

“Prove that a complete minimal hypersurface in  $R^n$  must be unbounded.”

and

“A complete minimal hypersurface in  $R^n$  has an unbounded projection in every  $(n - 2)$ -dimensional flat subspace.”

The immersed versions of these conjectures turned out to be false; immersed counterexamples were constructed by Jorge and Xavier in 1980 and Nadirashvili in 1996. We will show that the embedded versions are true.

Our main result is an effective version of properness for disks, giving a chord arc bound. Obviously, intrinsic distances are larger than extrinsic distances, so the significance of a chord arc bound is the reverse inequality, i.e., a bound on intrinsic distances from above by extrinsic distances. This chord-arc bound immediately implies both of Calabi’s conjectures for embedded minimal disks. (Received September 24, 2004)