THE EVANS LECTURES

## November 17–18, 2016

Fernando Marques, Princeton University

Lecture I – Min-Max Theory for the Area Functional - A Panorama

• Thursday, November 17 at 4:00 PM in 532 Malott Hall •

In this talk we will give a current panorama of the min-max theory for the area functional, initially devised by Almgren in the 1960s and improved by Pitts (1981). This is a deep high-dimensional version of the variational theory of closed geodesics. The setting is very general, being that of Geometric Measure Theory, and the main application until very recently was the construction of minimal varieties of any dimension in a compact Riemannian manifold. In the past few years we have discovered new applications of this old theory, including a proof of the Willmore conjecture, of the Freedman-He-Wang conjecture, and of Yau's conjecture (about the existence of infinitely many minimal hypersurfaces) in the positive Ricci curvature setting. We will give an overview of these results and describe open problems and future directions. Most of the material covered in these lectures is based on joint work with Andre Neves.
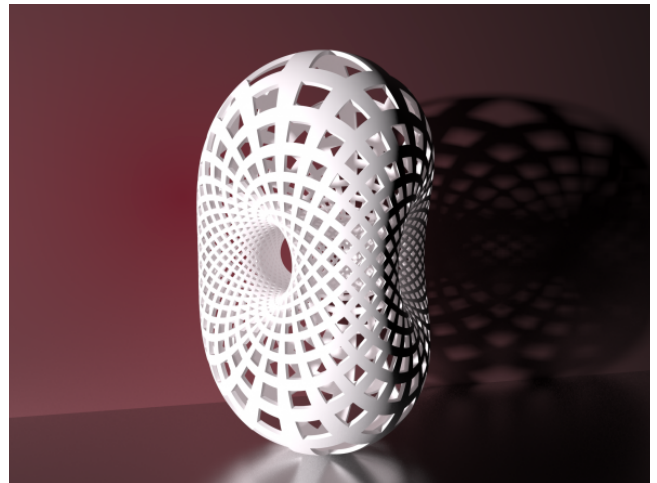
Lecture II – The Space of Cycles, Weyl's Law and Morse Index Estimates

• Friday, November 18 at 2:20 PM in 406 Malott Hall •

Abstract available at www.math.cornell.edu under Events.

Please join us Thursday, November 17 at 3:30 PM for refreshments in the Mathematics Department lounge (532 Malott Hall).