

Zoll manifolds, complex surfaces, and holomorphic disks

Claude LeBrun
83 Warner Ave
Roslyn Heights, NY 11577, USA

Abstract

This talk will describe joint work with Lionel Mason on compact surfaces whose geodesics are all simple closed curves. Our approach not only yields completely new proofs of all the main classical results concerning the Riemannian case, but also gives equally strong results concerning general affine connections.

In contrast to previous work on this subject, our approach is twistor-theoretic, and depends fundamentally on the fact that, up to biholomorphism, there is only one complex structure on CP^2 .

If time allows, I will also describe some more recent joint work with Mason on several related problems in higher dimensions which are amenable to a similar treatment.