

Séminaire d'Algèbre, Topologie et Géométrie

Jeudi 16 février à 14h00

Salle I

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Title : *Energy on Teichmüller Space and Siu-Sampson Rigidity Theory*

Abstract : Let M be a closed surface of genus at least two, N a manifold of non-positive Hermitian curvature (the condition used by Siu-Sampson in rigidity theory) and fix a homotopy class of maps from M to N . For each complex structure J on M there is a harmonic map $f : M \rightarrow N$, and, if this map is unique, it depends smoothly on J and its energy E defines a smooth function on the Teichmüller space of M . We prove that E is plurisubharmonic, study conditions when it is strictly plurisubharmonic, and give some results on the zeros of its complex Hessian.

The result that E is plurisubharmonic was suggested by Gromov as an alternative way of developing and strengthening the Siu-Sampson rigidity theory. We will sketch one strengthening developed by Gromov using this result, namely new sufficient conditions for a harmonic map to be holomorphic. By the existence theory of harmonic maps, this gives new sufficient conditions for continuous maps to be homotopic to holomorphic ones.