CENTRO DE MATEMÁTICA
UNIVERSIDADE DO PORTO

GEOMETRY AND TOPOLOGY SEMINAR

Classical Geometry and the Moduli Space of Higgs bundles

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Abstract. One of the most beautiful objects of classical geometry is the Kummer Surface, that was studied by Kummer in the 19th century. In a celebrated paper of 1969 Narasimhan and Ramanan studied the moduli space of vector bundles of rank 2 and trivial determinant over a curve of genus 2, proving that this space is isomorphic to projective space of dimension 3. In this space the moduli space of non-stable bundles is parameterized by a Kummer Surface.

In this seminar, I will introduce the Kummer Surface in the classical setting and recall the main results of the paper of Narasimhan and Ramanan mentioned above. Then I will talk about joint work in progress with Peter Gothen, where we describe the moduli space of Higgs bundles over a curve of genus 2. We obtain a similar description as in the paper above of the moduli of Higgs bundles in the so called nilpotent cone. The aim is to study the geometry of this nilpotent cone as done in the Narasimhan-Ramanan paper.

FRIDAY, DECEMBER 07	15H30	ROOM 1.09

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MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

With the support of UID/MAT/00144/2013