Seminari de Geometria Algebraica 2013/2014 (UB-UPC) Divendres 8, 15 i 22 de novembre de 15 a 17 hs, i divendres 29 de novembre de 16 a 18 hs, aula B1 FM–UB http://www.ub.edu/sga/

## Lectures on Higgs bundles over Riemann surfaces

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In these four lectures we describe the theory of G-Higgs bundles over a compact Riemann surface X, where G is a non-compact real semisimple Lie group, and their relation with representations of the fundamental group of X in G. Topics to be covered include:

- Correspondence between Higgs bundles and representations of the fundamental group.
- G-Higgs bundles when G is a split real form a complex semisimple Lie group: Hitchin components.
- G-Higgs bundles when G is a group of Hermitian type: Toledo invariant and Cayley correspondence.
- Hitchin fibration and Langlands duality.
- Involutions of the moduli spaces of Higgs bundles, Mirror symmetry, and *D*-branes.
- Extension of the theory to the study of representations of the fundamental group of a compact Riemann surface with punctures: Parabolic Higgs bundles.