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SEMINÁRIO DE GEOMETRIA

Dia 6 de Maio (sexta-feira), às 13H30, na sala 6.2.33

Holomorphic chains, Higgs bundles and the indefinite unitary group

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Abstract:

Holomorphic chains on a Riemann surface are sequences of holomorphic bundles, connected by holomorphic maps. They arise naturally as fixed points of the C^* -action on the moduli space of Higgs bundles.

Necessary conditions (on topological invariants and the stability parameter) for the existence of stable holomorphic chains were found by Garcia-Prada and Heinloth. We show that these conditions are also sufficient and extend previous results of Heinloth to prove irreducibility of the moduli of chains for the value of the stability parameter relevant to Higgs bundles.

We discuss two applications of our results: a count of the number of components of the nilpotent cone in the moduli space of Higgs bundles and a proof that the character variety for representations of the fundamental group of the surface in the indefinite unitary group is connected. The novelty in these applications is that we get results without co-primality conditions on topological invariants of the bundles.

This is joint work in progress with S. Bradlow, O. García-Prada and J. Heinloth.

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