SEMINÁRIO DE GEOMETRIA

Dia 28 Fevereiro (sexta-feira), às 13h30, sala 6.2.33

Schottky Representations and Principal Bundles

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Abstract:

The (Schottky) uniformization of Riemann surfaces motivated the search of a parametrization of holomorphic bundles. Semistable bundles over a fixed Riemann surface X are obtained from a unitary representation of the fundamental group of X, as was proven by Narasimhan and Seshadri for vector bundles, and by Ramanathan for principal bundles (for reductive groups G over C) . In the spirit of Schottky uniformization, Florentino and later with Ludsteck introduced the notion of Schottky representation of the fundamental group of X (for a general complex reductive algebraic group) and consider the principal bundle associated to it, called Schottky principal bundles. In this talk we will see that these principal bundles have trivial topological type and the map that associates to each Schottky representation a semistable principal bundle (Schottky map) is a local submersion. On the other hand, we will relate Schottky representations to certain Lagrangian subspaces of the moduli space of Higgs principal bundles.It is a fundamental result in the theory of Higgs bundles, the so-called non-abelian Hodge theorem, that by considering the Hitchin equations for G-Higgs bundles, one obtains a homeomorphism between the Betti space and the moduli space of semistable G-Higgs bundles over X. By a remark of Baraglia-Schaposnik, when considering G-Higgs bundles over X with a real structure, one is naturally lead to representations into G of the fundamental group of a 3-manifold with boundary X. These are naturally related to Schottky representations, as we will present in this talk. We will end with some open problems. This is a joint work with Susana Ferreira and Carlos Florentino.