

25° Colóquio Brasileiro de Matemática

Curso Avançado

Schubert Calculus: an Algebraic Introduction

(Letterio Gatto)

Resumo. Schubert Calculus is the set of formal rules necessary to perform computations in the intersection (or cohomology) ring of $G(k, n)$, the grassmannian variety of k -planes in \mathbf{C}^n . The main goal of the course is to let the audience becoming quickly familiar with Schubert Calculus. This will be possible because of a new (although very natural) purely algebraic presentation based on the realization of the cohomology of $G(k, n)$ as a suitable quotient of a natural ring of differential operators on the exterior algebra of a n -dimensional vector space. Classical *Pieri's* and *Giambelli's* formulas, the fundamental blocks of Schubert Calculus, are shown to be, respectively, nothing but than Leibniz's rule and integration by parts. The lectures would be delivered either in English or Portuguese.

Prerequisites. The course will deal in a elementary way with important topics in Algebraic Geometry not usually treated in post-graduate programs. However, the only important pre-requisite is a (good) course of linear algebra. Basics on exterior algebras shall be developed during the lectures, if necessary.