Publicacions més rellevants de la línia de recerca:
Geometria Algebraica

Abstract: This book is an elementary introduction to stable maps and quantum cohomology, starting with an introduction to stable pointed curves, and culminating with a proof of the associativity of the quantum product. The viewpoint is mostly that of enumerative geometry, and the red thread of the exposition is the problem of counting rational plane curves. Kontsevich's formula is initially established in the framework of classical enumerative geometry, then as a statement about reconstruction for Gromov–Witten invariants, and finally, using generating functions, as a special case of the associativity of the quantum product. Emphasis is given throughout the exposition to examples, heuristic discussions, and simple applications of the basic tools to best convey the intuition behind the subject. The book demystifies these new quantum techniques by showing how they fit into classical algebraic geometry. Some familiarity with basic algebraic geometry and elementary intersection theory is assumed. Each chapter concludes with some historical comments and an outline of key topics and themes as a guide for further study, followed by a collection of exercises that complement the material covered and reinforce computational skills. As such, the book is ideal for self-study, as a text for a mini-course in quantum cohomology, or as a special topics text in a standard course in intersection theory. The book will prove equally useful to graduate students in the classroom setting as to researchers in geometry and physics who wish to learn about the subject.

Abstract: Working over $\mathbb{C}$, we show that, apart possibly from a unique limit point, the possible values of multi-point Seshadri constants for general points on smooth projective surfaces form a discrete set. In addition to its theoretical interest, this result is of practical value, which we demonstrate by giving significantly improved explicit lower bounds for Seshadri constants on $\mathbb{P}^2$

and new results about ample divisors on blow ups of $\mathbb{P}^2$ at general points.

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Abstract: Let C be a smooth projective irreducible curve over an algebraic closed field k of characteristic 0. We consider Brill-Noether loci over the moduli space of morphisms from C to a Grassmannian $G(m, n)$ of m-planes in k^n and the corresponding Quot schemes of quotients of a trivial vector bundle on C compactifying the spaces of morphisms. We study in detail the case in which $m = 2, n = 4$. We prove results on the irreducibility and dimension of these Brill-Noether loci and we address explicit formulas for their cohomology classes. We study the existence problem of these spaces which is closely related with the problem of classification of vector bundles over curves