Quantum Cohomology in the Real World

Frank Sottile
University of Massachusetts, Amherst

Thursday, November 30, 2000
102 Bradley Hall, 4:00 pm
(Tea 3:30 pm Math Lounge)

Abstract

In the last (20th) century, two different groups of scientists were led to exactly the same question in pure mathematics, a problem of counting certain rational curves on a Grassmannian. The work of one group, theoretical physicists, spawned important mathematical activity, including quantum cohomology. This story of mathematics inspired by physics is well-known, even though the physical motivation remains obscure to many mathematicians.

The other group of scientists were engineers working in systems theory, specifically on the problem of dynamic feedback control of linear systems. While their story is less-known, their motivation for studying curves on Grassmannians are straightforward and their work leads to a very concrete understanding of this problem.

In this talk, I will make the second story better-known, explaining how engineers were led to study spaces of curves on Grassmannians and some further mathematics inspired by their work.

This talk should be accessible to graduate students.

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