Everything that can be counted does not necessarily count; everything that counts cannot necessarily be counted. – Albert Einstein

The Trivial Notions Seminar
Proudly Announces

How to Count Like Schubert

A talk by

Jack Huizenga

Abstract

How many lines are there on a smooth cubic surface? Given four general lines in $\mathbb{P}^3$, how many lines meet all four? Given five general lines in $\mathbb{P}^2$, how many conics are tangent to all five? These types of questions can often be easily answered using Schubert calculus, which is essentially a complete description of the cup product structure on the cohomology groups of a Grassmannian, together with a basic geometric understanding of Chern classes. We will describe the cohomology ring of the Grassmannian $\mathbb{G}(1,3)$ of lines in $\mathbb{P}^3$, and use this description to answer the second question. We will also give a geometric description of Chern classes, and use them together with the description of the cohomology ring of $\mathbb{G}(1,3)$ to answer the first question. Finally, we will discuss the uncanny relevance of the Einstein quote to the third question.

Thursday, November 13th at 2:07 pm
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