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LECTURE

MODERN ALGEBRAIC GEOMETRY

"Modern", is this not just a buzzword, a word known from political campaigns? After all, who wants to be old fashioned?

No, the attribute "modern" in "Modern Algebraic Geometry" is not just for advertisement; Modern Algebraic Geometry is a field for itself, distinct from Classical Algebraic Geometry.

And it is not so modern after all. In fact, it was developed mostly by Alexander Grothendieck in the 1960s. So, it is actually already over 50 years old.

In the center of the theory is the notion of *scheme*. This is a vast generalization of the concept of variety. To any ring, one can associate it "geometric realization", the corresponding affine scheme, and then one can "glue such objects together". One can – and one does – consider schemes over arbitrary rings and even over schemes themselves.

The theory of schemes is not just very general, to use it is also like driving a car in between cities rather than walking. One just reaches the desired goals much more quickly and conveniently. Also, it is very safe. For example, if one considers questions where multiplicities are of importance, one usually obtains the correct result "by free".

Of course, before one can benefit from the theory, one has to learn it, and many mathematicians shy away from it because of some initial mental barrier. Well, they really miss something ...

In the lecture, I will start right away with schemes. I will assume that the audience is familiar with classical algebraic geometry and also with manifolds and with basic category theory.

If you want to participate but you are unsure if you have the necessary background, please write me an email! We can then set up a study program so that you are well prepared for the lecture. I can also give a crash-course in the week before the semester, that is, from March 25 to March 29.

As you might guess from this advertisement, the language will be English.

There will also be assignments, which we will discuss in an informal way.

Place and time

Monday 11:15 and Friday 13:15 in room SG 3-11 in the University ("Seminargebäude")
(The time can still be changed, but you should be present in the first lecture.)
Starting on Monday, April 1