

Towards a Closer Integration of Algebra and Geometry in Teaching

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Algebra and geometry are usually not very strongly interconnected in school teaching. The talk shows how fruitful it can be to enhance the integration of these two important parts of the curriculum.

Recent progress in visualization software for implicit algebraic curves and surfaces, such as GeoGebra and Surfer (see www.Imaginary-Exhibition.com/surfer?lang=en), does not only allow the interactive illustration of phenomena, but even experimental approaches.

The Imaginary-Exhibition showed how the unexpected aspect of beauty in mathematics may raise interest for these objects, and many teachers used this already during the last couple of years for opening deep discussions on the interaction of algebra and geometry in their learning groups.

The talk gives several examples of how to incorporate implicit equations and 3d-coordinates very early in the usual school curricula, starting at the age of 13 years.

The use of computer algebra software even enables older learners to study the algebraic and geometric properties of deep and interesting topics, such as discriminants of polynomials of higher degree.