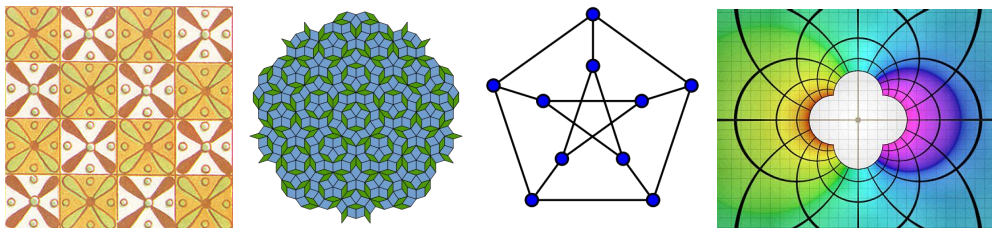


HEGL Proseminar/Seminar “Illustrating Mathematics”: Symmetries

Geometry meets Algebra

Geometric structures are usually investigated by looking into their symmetries or lack thereof. In this iteration of the “Illustrating Mathematics” Proseminar/Seminar of the Heidelberg Experimental Geometry Lab (HEGL), we shall learn about some topics of discrete and nondiscrete geometry/topology, symmetries, and their connections with group theory. Students will deliver a short mathematical talk as well as work throughout the semester on visualization projects related to their chosen topics.

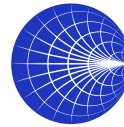


Organization and Format

The visualization projects will be carried out in small groups, supervised within HEGL. The project topics for the semester are distributed among the participants based on their suggestions and order of preference, *before* the Winter Semester starts. Throughout the semester, the groups will work on their visualization projects with the goal of producing a concrete, graphical output that will be part of HEGL’s library. This output can be, for example, a computer code / program, a (mobile or web) app, an illustrative animation, a 3D rendered model, a (physical) “handicraft” (*Bastel*, mit Bastelanleitung), a 3D printed object(s), etc. You can check out some examples of past graphical outputs at the lab’s website (<https://hegl.mathi.uni-heidelberg.de/galleries/>) or at the lab itself (in the *Mathematik*on, Level –1). The graphical output is presented at the end of the semester via both a short group presentation (5min) and a blog post at the HEGL homepage (<https://hegl.mathi.uni-heidelberg.de/blog/>).

Within each project topic, there are multiple themes for *individual* talks, so that each student will give an individual maths talk covering mathematical content related to their visualization projects. Preparing your lecture and actively attending all talks are *requirements* for successful participation in the seminar. All talks will take place on October 27 and 28.

Language: Presentations and material should be in English.



Target audience and choice of topics:

There are no formal prerequisites to enroll at the seminar besides familiarity with the usual first courses in Maths (such as “Analysis” and “lineare Algebra”). Some familiarity with Group Theory might be useful but is not a must. Similarly, some background with programming skills or maths software can be helpful, but these are also *not* required. Everyone with interest in symmetries, groups, and/or nice geometric objects is welcome to attend!

If you would like to attend the seminar, please indicate your interest via Müsli (<https://muesli.mathi.uni-heidelberg.de/>) or email (fschaffhauser@mathi.uni-heidelberg.de).

Academic credits:

All academic credits earned through HEGL (Pro)seminars and Student Projects count as **Mathematics** credits **only**. In particular, HEGL activities are *not* part of the *Informatics* and *Computer Science* Handbooks, so they cannot count as academic credits towards those degrees.