

Student Symposium

Knots, Primes and Other Analogies

Matthias Kemper

Robin Sroka

Jonas Stelzig

29.05.–03.06.2017

Analogies are an important ‘soft’ tool in mathematical research, often neglected in the usual curriculum in favor of the hard facts. They can provide guidance for the beginner entering a field as well as experts looking for different perspectives. In this one week student-organized symposium, we want to study the rôle of analogies in two ways.

In one series of talks, we focus on a specific analogy between number theory and topology, famous under the nickname ‘knots & primes’ and introduced by D. Mumford and B. Mazur. This roughly says that several formulas and definitions in knot theory and number theory look similar if one replaces the words *knot* by *prime* and *fundamental group* by *Galois group* (or more generally topology by *étale topology*).

In a second series of talks we want to get an overview of many ways analogies appear in mathematics. The individual talks will be surveys on different instances of analogical reasoning. The participants are encouraged to think of their own topics, but we also provide an extensive list with suggestions. Examples could include discrete or graph-theoretic analogues of differential geometric concepts, various versions of the Fourier-transform, number fields and function fields or different methods of proof in systolic geometry.

The symposium is directed at Master and PhD-students in theoretical mathematics. All participants should give at least one talk. It is organized by students from Münster, Germany in cooperation with the university Paris 7 and will take place in Paris with talks given from 29.05.-03.06.2017. Limited funding for lodging and transport for students from Münster will (probably) be available.

If want to know more and are interested in participating, visit our website <http://go.wwu.de/kpoa17> and email us to analogies@wwu.de.