1154-00-1073 **Katja Berčič***, katja.bercic@fau.de, and **Michael Kohlhase**, **Florian Rabe** and **Tom Wiesing**. *Research data in mathematics: taking the high road.*

Mathematicians produce data and use them in their research to find patterns and test conjectures. This is evidenced by the success of several larger projects: the OEIS, the LMFDB, the Small Groups Library, and the House of Graphs, to name just a few. At the same time, mathematics remains largely unaffected by the recent trends of publication and management of research data. In particular, this holds true for the push to make research data FAIR (findable, accessible, interoperable, and reusable).

This talk will discuss the notions of mathematical data and put them into the context of doing mathematics. We will discuss data-related needs of the mathematical community, what could be done to address them, and what one may encounter while doing so.

There is a conceptual and technical tension between two kinds of representations of mathematical objects: those needed to store and index the objects in databases and those needed to communicate the mathematical meaning to humans and machines alike. Instead of treating this as a dilemma, we build a conceptual framework that reconciles the technical and semantic aspects. Last, but not least, we present a prototype for a unified data infrastructure that aims to improve the usability of mathematical data. (Received September 13, 2019)