

## Mathematical Colloquia

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**Monday, 27 March 2023**

17:15 h, lecture room B6 (ExWi)

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### q-Analoues of Matroids

**Abstract :** Matroids are defined as a combinatorial abstraction of several objects such as linearly independent vectors or graphs. On the other hand, in combinatorics, a q-analog of a discrete structure is defined by replacing finite sets with finite dimensional vector spaces. In this talk, we first define a matroid with certain equivalent axiomatic definitions, which are called cryptomorphism, by supporting them with trivial examples. Then we discuss their q-analogs by comparing differences and similarities with the classical case. Finally, as a construction and an application of a q-matroid, we mention their relation with a q-analog of other combinatorial objects called designs, and state some open questions. This work is a part of the research project supported by Women in Numbers - Europe and of a master studies of Martin Bergamin at the UZH.