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## The many faces of magnitude

The magnitude of a square matrix is the sum of all the entries of its inverse. This strange definition, suitably used, enables us to define the "magnitude" of many objects in different contexts across mathematics. All of them can be seen as measures of size. For example, the magnitude of a metric space combines classical quantities such as volume, surface area, and dimension. The magnitude of a category is closely related to Euler characteristic. The magnitude of a graph is an invariant sharing features with the Tutte polynomial (but not a specialization of it). Magnitude also appears in the difficult problem of quantifying biological diversity: under certain circumstances, the greatest possible diversity of an ecosystem is exactly its magnitude. And there is now a theory of magnitude homology, which has the same relationship to magnitude as ordinary homology does to Euler characteristic. I will give an aerial view of this landscape.

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15:30 – 16:30 Technikerstraße 21