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Fachgebiet für Elektrische Energiesysteme (EES)

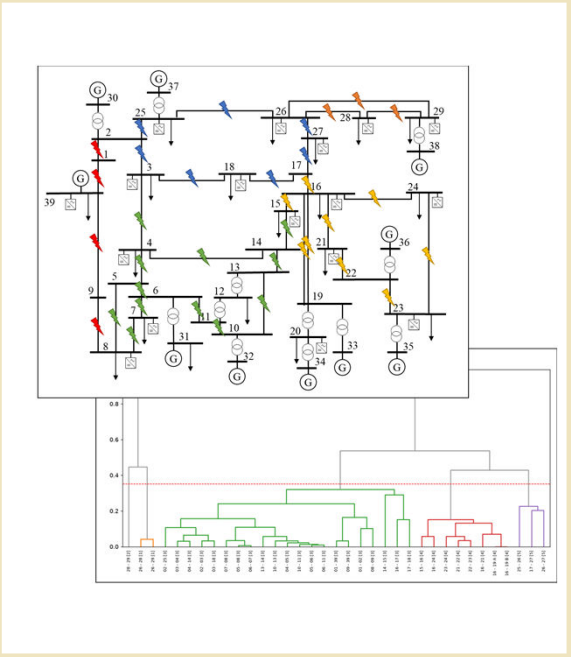
Clustering Methods in Power Systems Engineering – Review and Application to Short-Term Voltage Stability Data

Background

Clustering methods are widely used in power systems engineering, for example to group the behavior of grid faults in large-scale networks into network regions. A common objective of such approaches is to reduce the computational effort of simulation studies. However, the choice of a suitable clustering method depends strongly on the subject of investigation, as different methods are based on different assumptions and are suited to different types of data.

Objectives and Tasks

The first part of this thesis comprises an overview of common clustering methods and their characteristics. This is complemented by a literature review of clustering approaches applied in power systems engineering, with a focus on dynamic simulations and, ideally, short-term voltage stability.
In the second part, selected methods are applied to data from short-term voltage stability simulations of a test grid. The results of the different methods are then compared and evaluated.



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