

Distributionally Robust Distribution Network Configuration Under Random Contingency

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Abstract: Topology design is a critical task for the reliability, economic operation, and resilience of distribution systems. This work proposes a distributionally robust optimization (DRO) model for designing the topology of a new distribution system facing random contingencies. The proposed DRO model optimally configures the network topology and integrates distributed generation to effectively meet the loads. As compared with a classical robust optimization model, the DRO model explicitly considers the contingency uncertainty and so provides a less conservative configuration, yielding a better out-of-sample performance.

Bio: Dr. Chaoyue Zhao is an Assistant Professor in Industrial and Systems Engineering, University of Washington. Before that, she was hired as the Jim & Lynn Williams Assistant Professor in Oklahoma State University. She obtained her PhD degree at the University of Florida in 2014 and B.S. degree in Fudan University in China in 2010. Dr. Zhao works on data-driven optimization methodologies to support strategic and operational planning in power systems management. She has received multiple grants from the federal agencies such as the National Science Foundation, Department of Transportation and Argonne National Laboratory. She is the recipient of awards including the runner up of the Pritsker Doctoral Dissertation Award, and Energy Systems Division Outstanding Young Investigator Award in IISE.