



## Super-Positioning of Voltage Sources for Fast Assessment of Wide-Area Thévenin Equivalents

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*Published in:*

Proceedings of the 2018 IEEE PES General Meeting

*Link to article, DOI:*

[10.1109/PESGM.2018.8585962](https://doi.org/10.1109/PESGM.2018.8585962)

*Publication date:*

2018

*Document Version*

Peer reviewed version

[Link back to DTU Orbit](#)

*Citation (APA):*

Møller, J. G., Jóhannsson, H., & Østergaard, J. (2018). Super-Positioning of Voltage Sources for Fast Assessment of Wide-Area Thévenin Equivalents. In Proceedings of the 2018 IEEE PES General Meeting IEEE. <https://doi.org/10.1109/PESGM.2018.8585962>

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## **Super-Positioning of Voltage Sources for Fast Assessment of Wide-Area Thévenin Equivalents**

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A method for superimposing voltage sources is sought optimized by using a sparse triangular solver and multiprocessing. A revision to the method is suggested which exploits Schur's complement of the network admittance matrix and optimal re-use of computations. The algorithm is implemented and parallelized for shared memory multiprocessing. The proposed algorithm is tested on a collection of large test systems and performance is found to be significantly better than the reference method. The algorithm will thereby facilitate a speed-up of methods relying on Thévenin equivalent representation such as the Thévenin equivalent method for contingency assessment.