|  |
| --- |
| **/!\ *the following libraries are required: YALMIP, MOSEK, IPOPT*** |

This is a Matlab implementation of the SOCP augmented relaxation OPF solution method from (Nick et al, 2017), as studied in (Bobo et al, 2020). Below is a summary of the different files.

**main.m** Computes an optimal solution to SOCP-OPF for IEEE34 or IEEE123 with easy access to some parameters, e.g. loading or voltage bounds

**SOCP\_Nick\_build.m** Builds a YALMIP optimizer object for the SOCP-OPF (used in main.m)

**prepare\_and\_run[…].m** Prepares parameters and solves the SOCP-OPF (used in main.m)

**constants** Definition of a few constants (used in SOCP\_Nick\_build.m)

**grid\_IEEE34.m** Definition of custom IEEE34 parameters (used in main.m)

**grid\_IEEE123.m** Definition of custom IEEE123 parameters (used in main.m)

**When publishing results based on the implementation of the SOCP OPF, please cite:**

L. Bobo, A. Venzke, S. Chatzivasileiadis, "Second-Order Cone Relaxations of the Optimal Power Flow for Active Distribution Grids", 2020. Available online: <https://arxiv.org/abs/2001.00898>

M. Nick, R. Cherkaoui, J.-Y. LeBoudec, and M. Paolone, "An exact convex formulation of the optimal power flow in radial distribution networks including transverse components", *IEEE Transactions on Automatic Control*, 2017.

**When publishing results based on the data for IEEE34 and IEEE123 feeders, please cite:**

L. Bobo, A. Venzke, S. Chatzivasileiadis, "Second-Order Cone Relaxations of the Optimal Power Flow for Active Distribution Grids", 2020. Available online: <https://arxiv.org/abs/2001.00898>

W. H. Kersting, “Radial distribution test feeders,” in *Conference Proceedings of the 2001 IEEE Power Engineering Society Winter Meeting*, 2001. vol. 2, pp. 908–912