

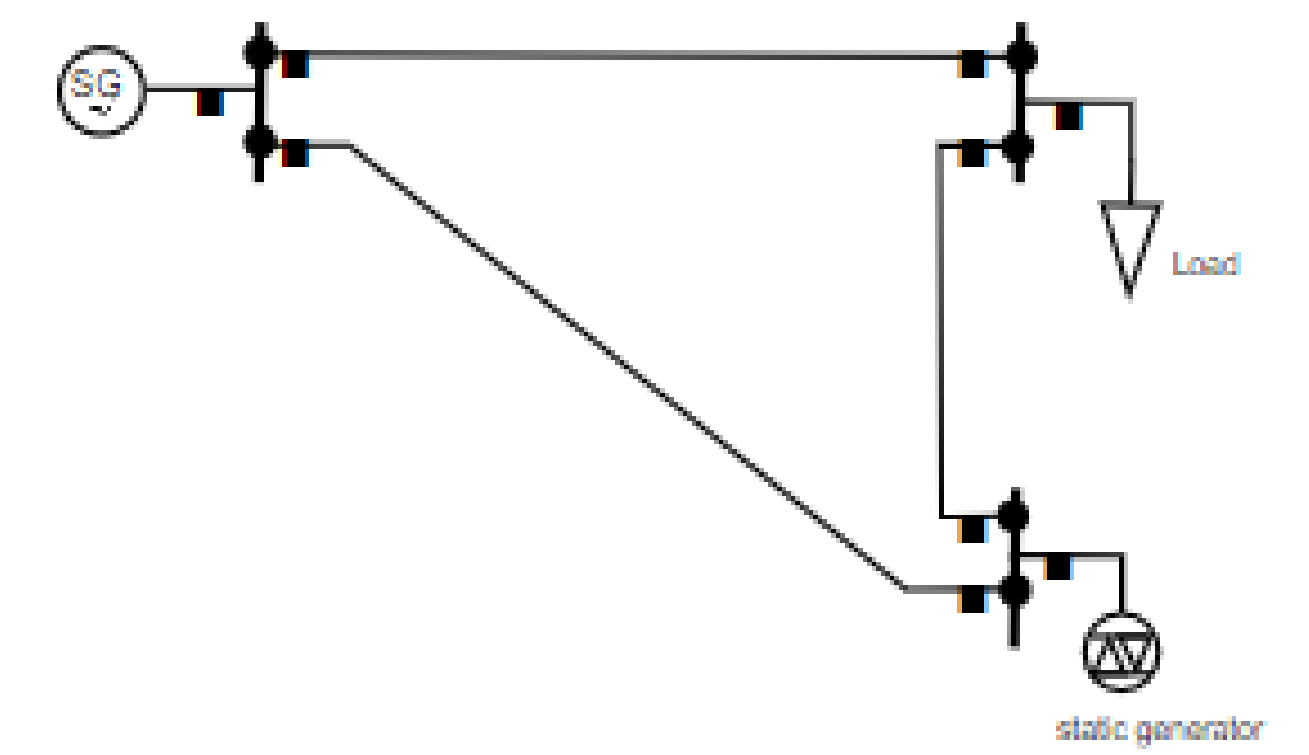
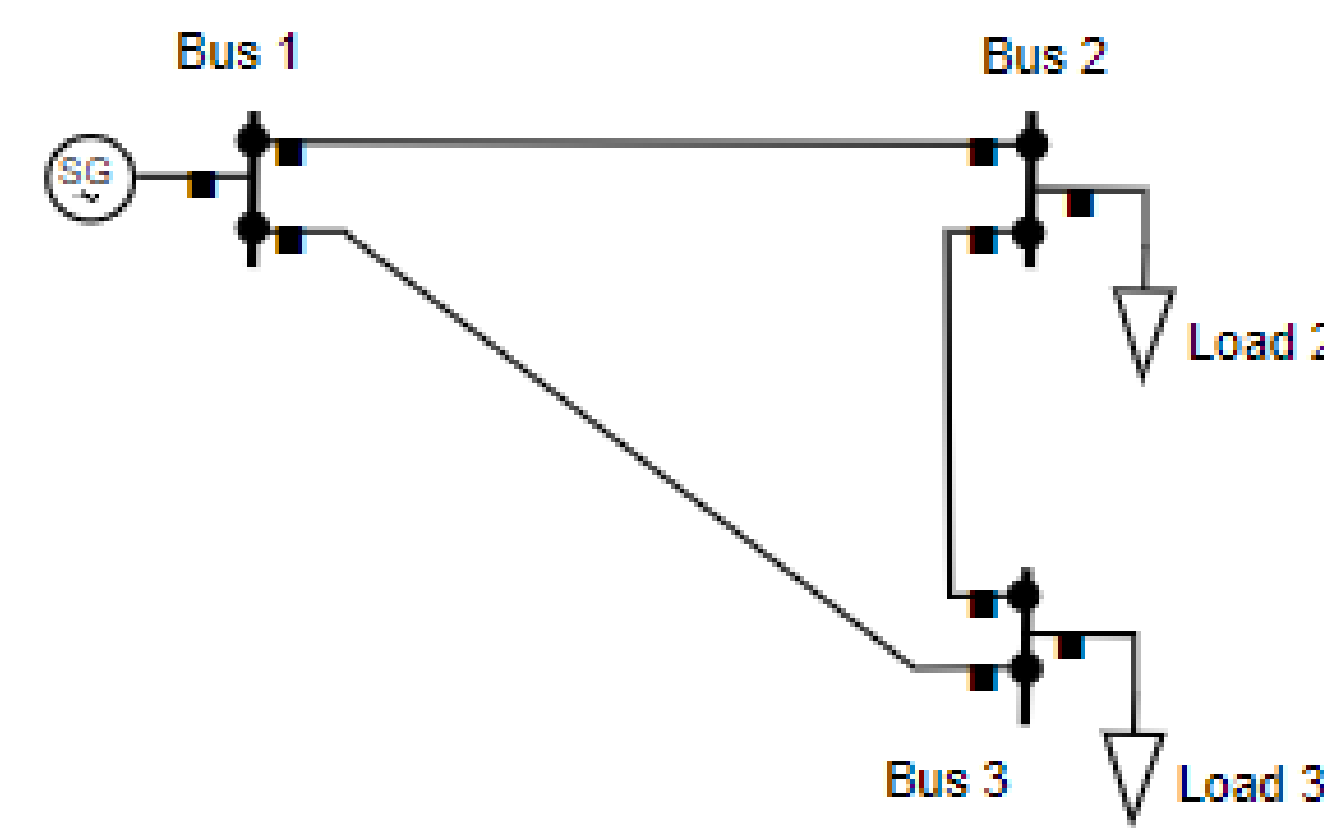
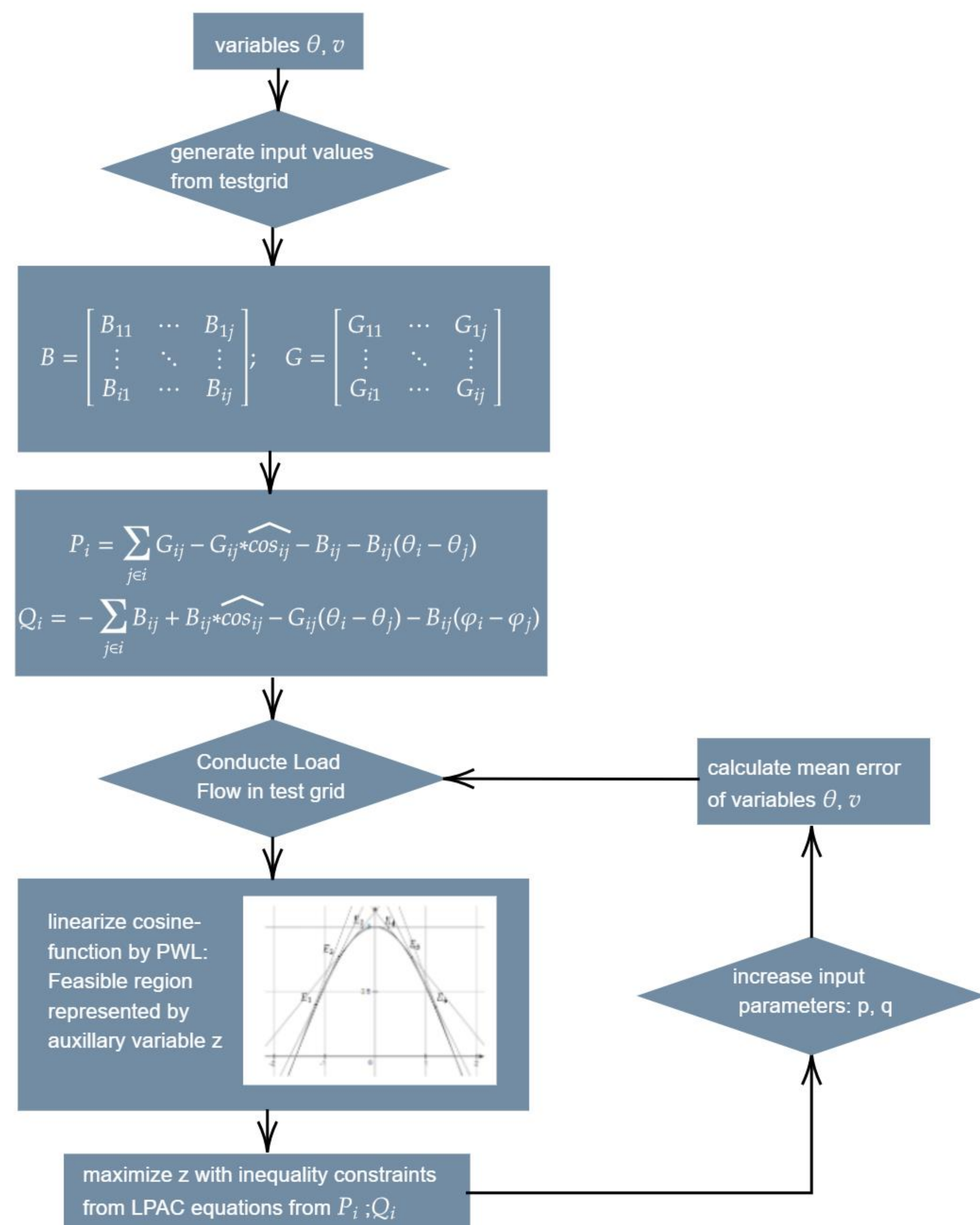


Linear programming method for Loadflow calculation

B. Eng. Yasin Mouzaoui



Evaluation of linear programming model for AC Loadflow by iterating input variables P, Q :

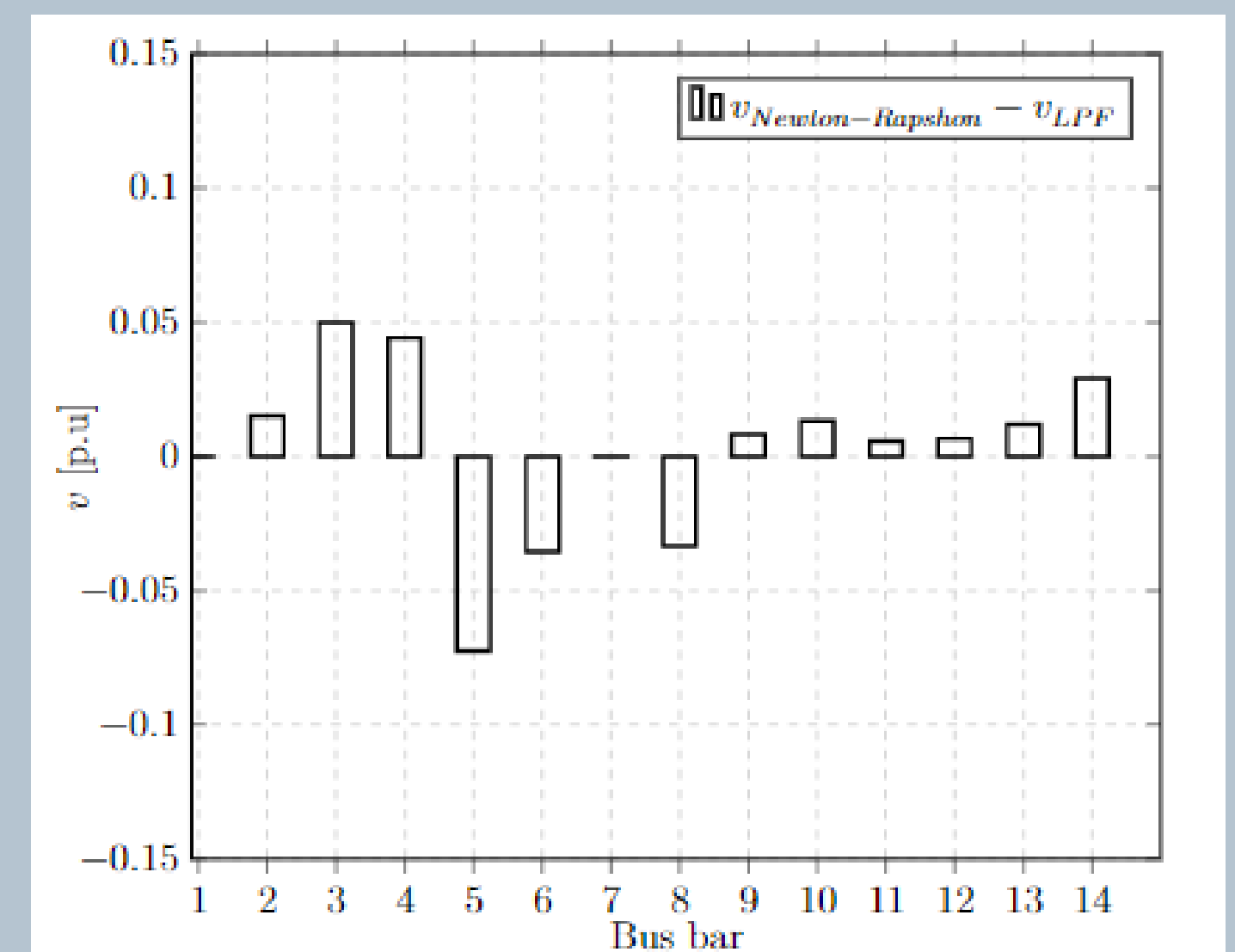
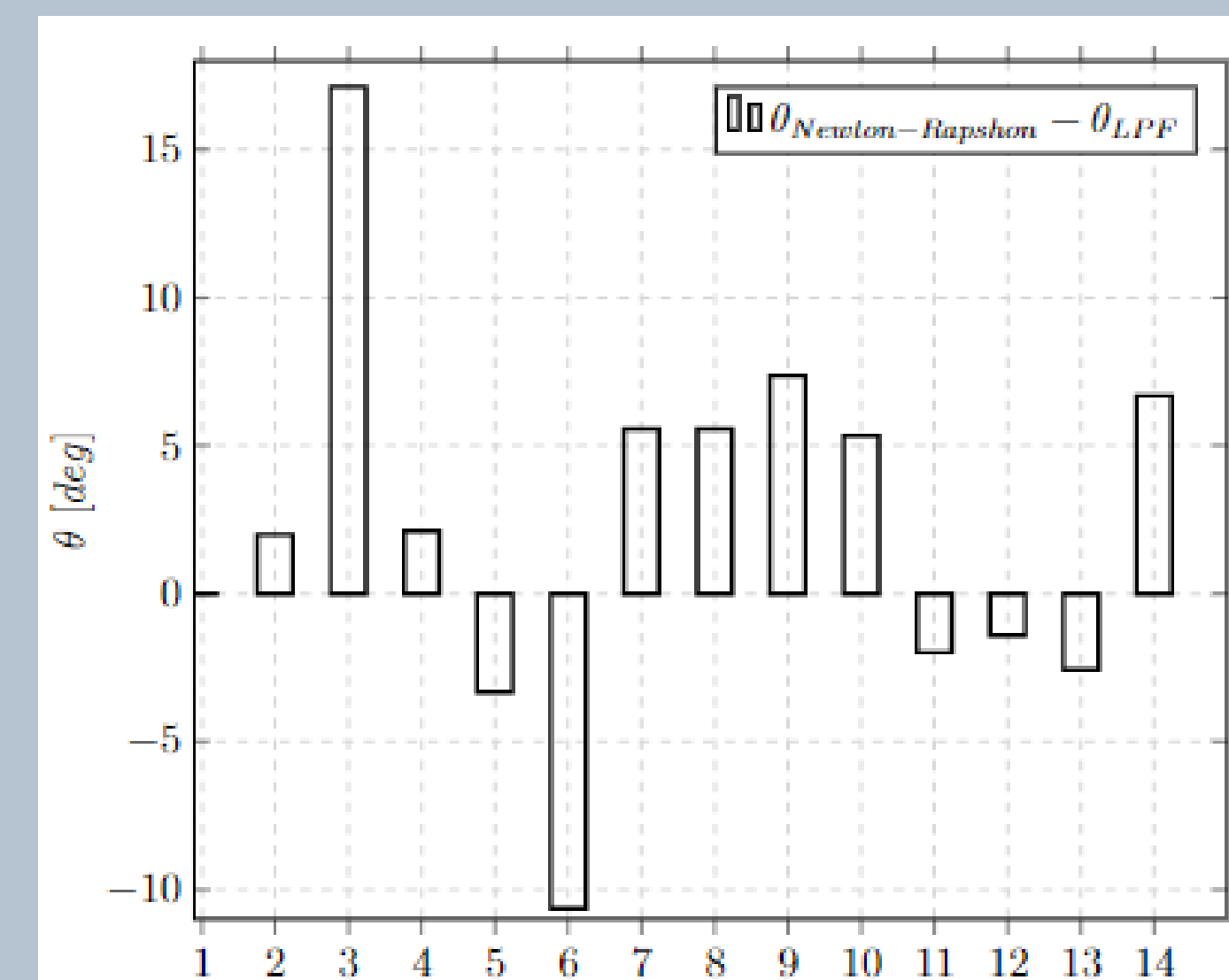


LPAC-Model conducted in:

- 3-Bus Testgrid with 1 slack, 2 PQ
- 3-Bus Testgrid with 1 slack, 1 PV, 1 PQ
- IEEE 14 Bus Testsystem

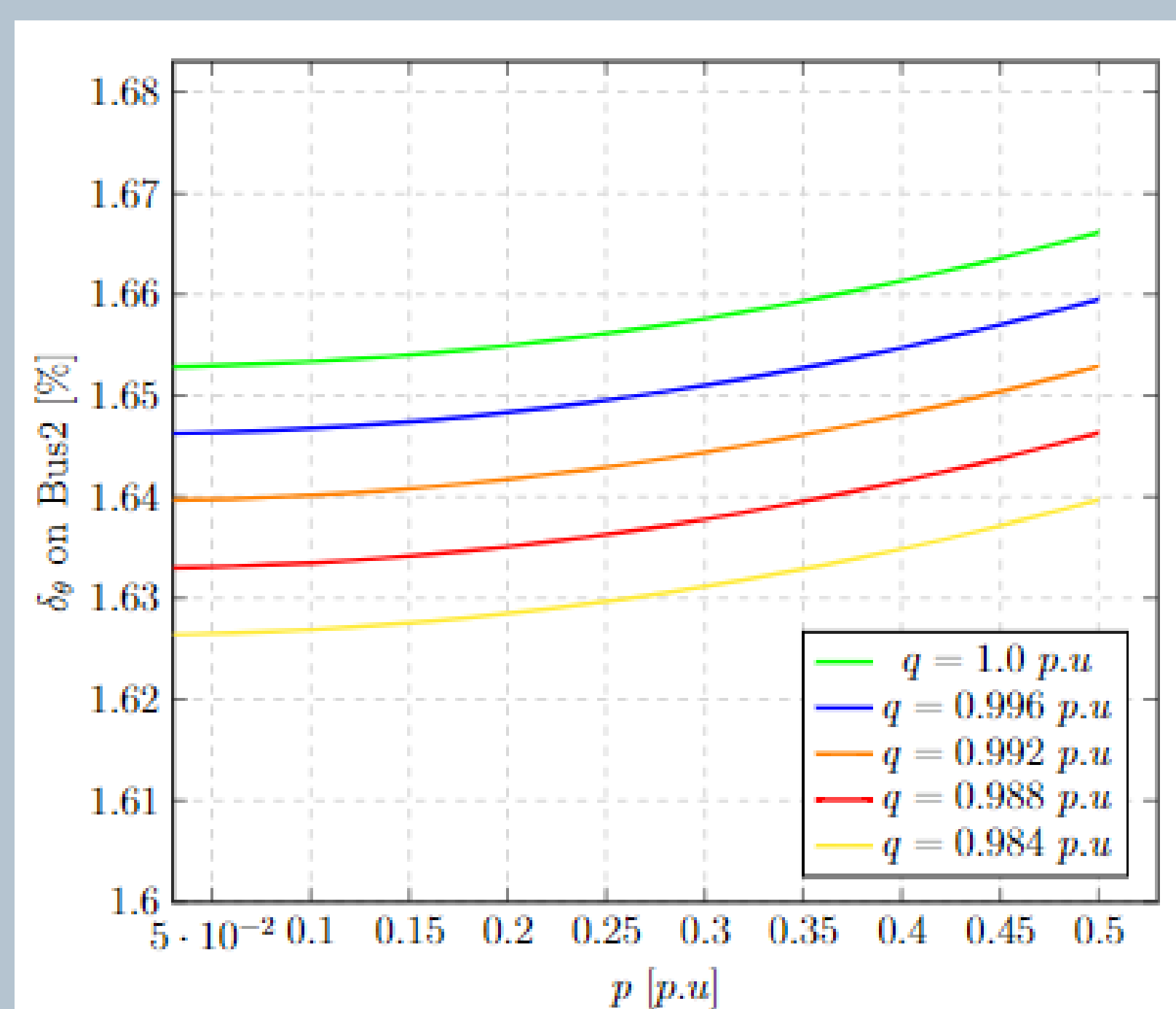
- Results of voltage magnitude deviation compared to Newton-Raphson in acceptable range
- Results of voltage angle deviation compared to Newton-Raphson in larger power systems is not acceptable

Results for IEEE 14 Bus Testsystem



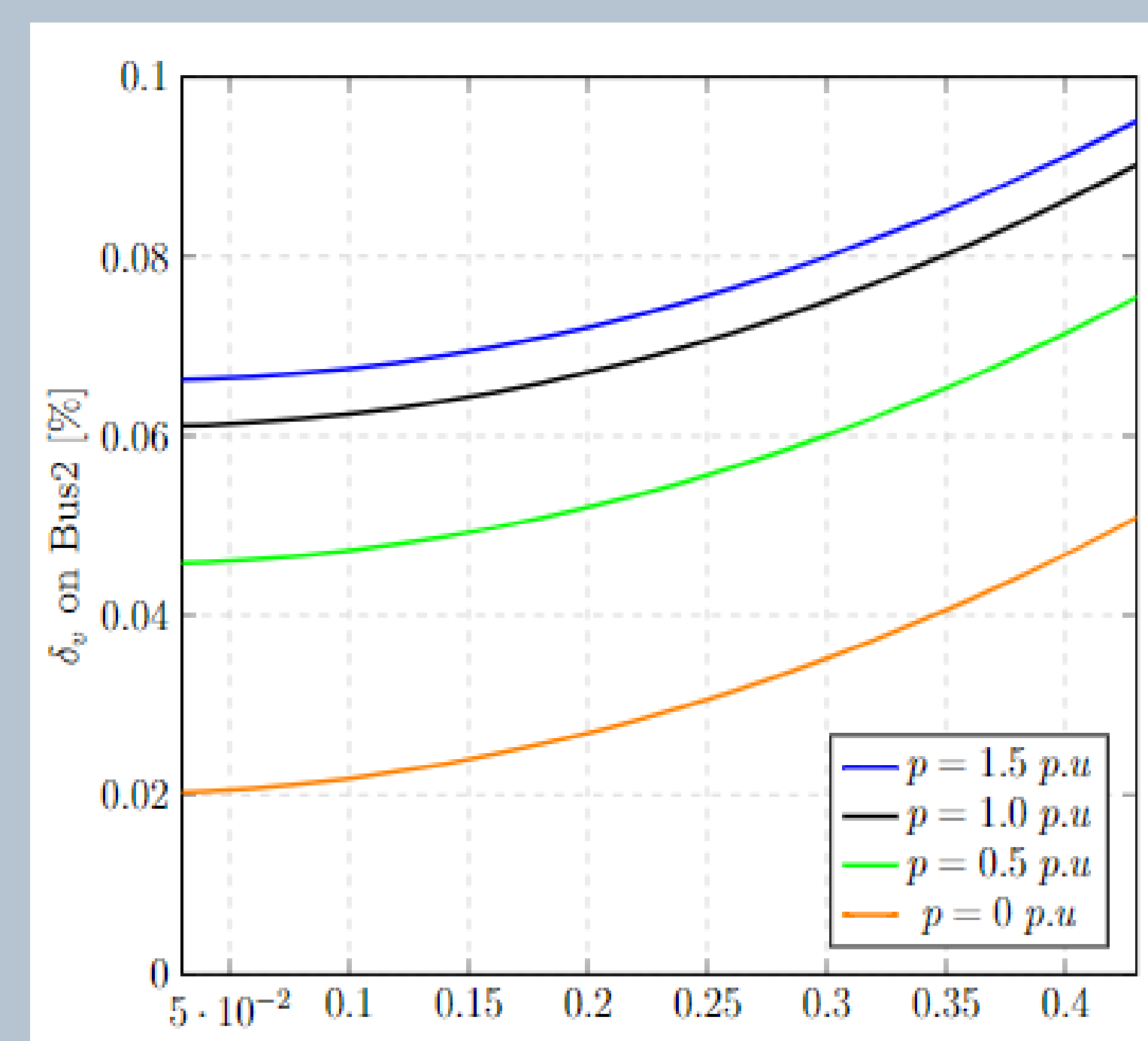
Evaluation criteria:
Relative error of θ compared to Newton-Raphson

- $Q = \text{const.}$
- Positive disproportional correlation between p and voltage angle proven



Evaluation criteria:
Relative error of v compared to Newton-Raphson

- $P = \text{const.}$
- Positive disproportional correlation between q and voltage magnitude proven



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Further Research in this field:

- Optimal power flow for time-based reactive power dispatch to maximize the dynamic reactive power reserve