

Problem

- Emulating distortion requires finding the solution of a nonlinear equation

Objective

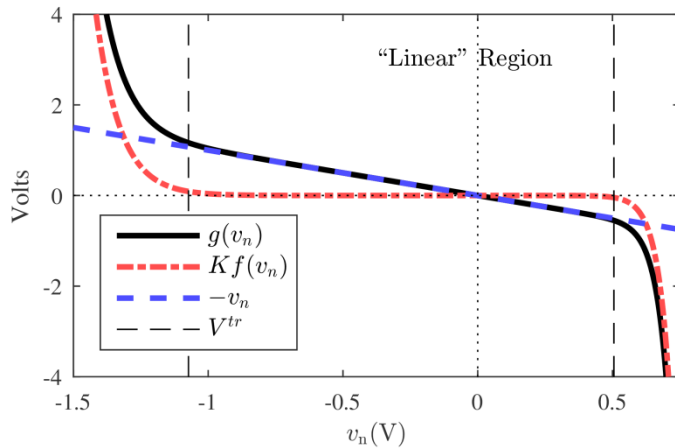
- Reduce the cost of iterative solvers and improve their robustness

Approach

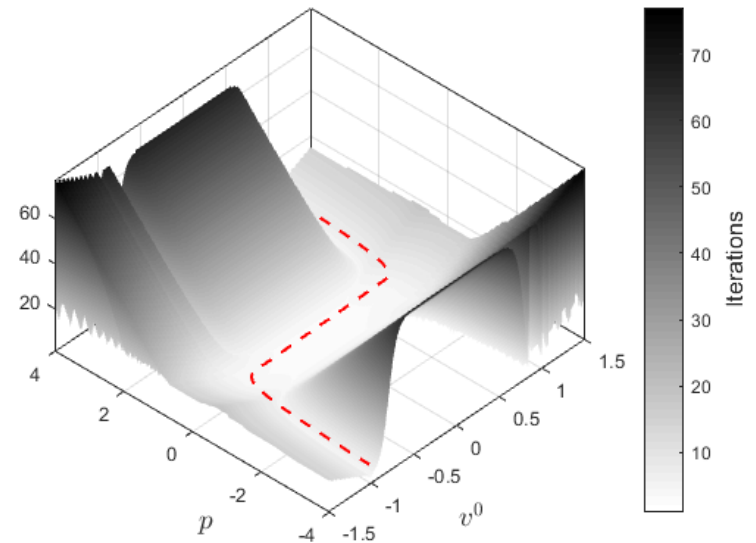
- Derive information from the nonlinear equation

Methods

- Find an initial iterate based upon an approximation
- Apply a cap to the step of the solver based upon the gradient of the nonlinear equation



Asymmetric diode clipper nonlinearity: $Kf(v_n)$ shows an analytic invertible approximation, V^{tr} shows the values of the capping.



Antiparallel diode clipper nonlinearity: constant offset p and the initial iterate v^0 against iterations required to find the root, which is marked in red.