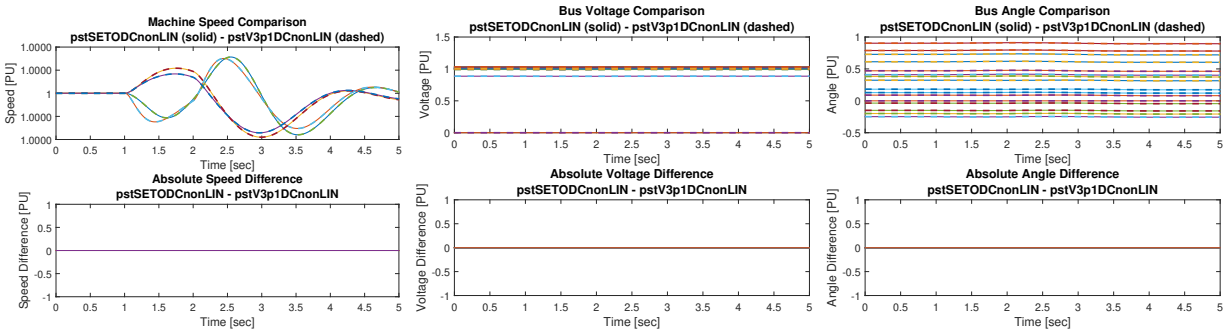
Summary

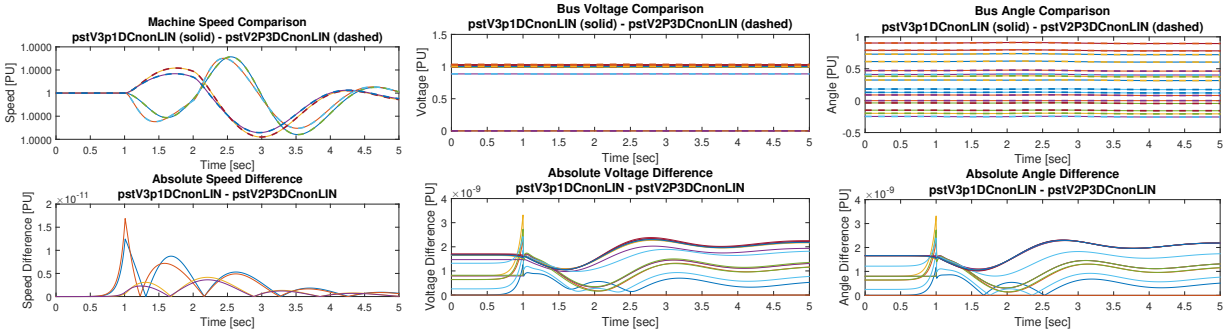
- A HVDC case has been created and tested as working in all versions of PST.
- Using the structured global approach increases speed by over 2 times.
- Minor differences exist between version 2.3 and 3.1 in non-linear simulation output.
- All linear results match between versions, but do not match non-linear output (possibly due to improper data handling - no prior examples were found).

Scenario Description A 16 bus system with one HVDC link and four machines equipped with st3 exciters, pss, and governors was perturbed by a 0.1 PU active load pulse from $t = 1$ to $t = 2$

Non-Linear Results The new pstSETO version was based on version 3.1 so it makes sense that there are no differences in machine speed or bus voltage and angle. Total non-linear simulation time in 3.1 was 18.876 seconds, while pstSETO was 8.853 seconds (reduced from 12.619 seconds pre-DC-global adaptation into structure).



The differences between version 3.1 and 2.3 range from 10^{-11} to 10^{-9}. There must have been changes to the way DC lines were initialized between versions. Value changes pre-event are mysterious.



Linear Results All versions provide the same output, however it does not match non-linear data. This is very possibly due to improper data handling as there was no example on using linear simulation for systems involving DC lines.