



Figure 1 (a). Photograph of the steel railway bridge.

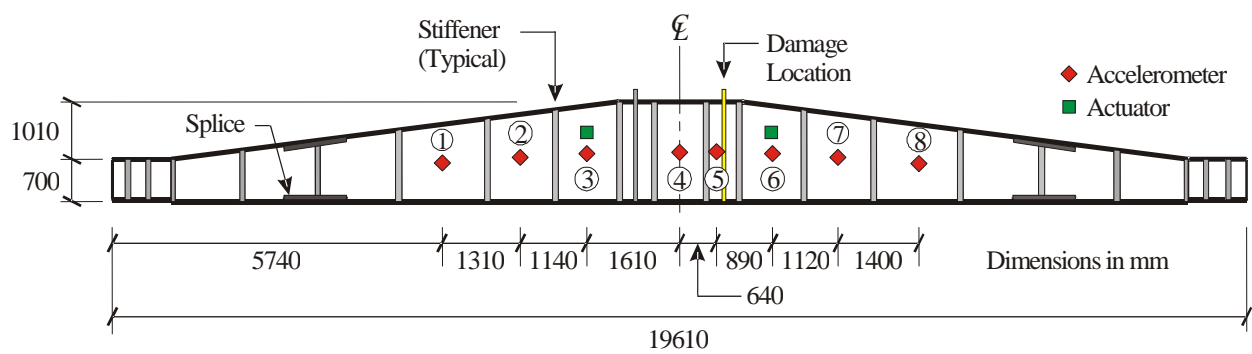
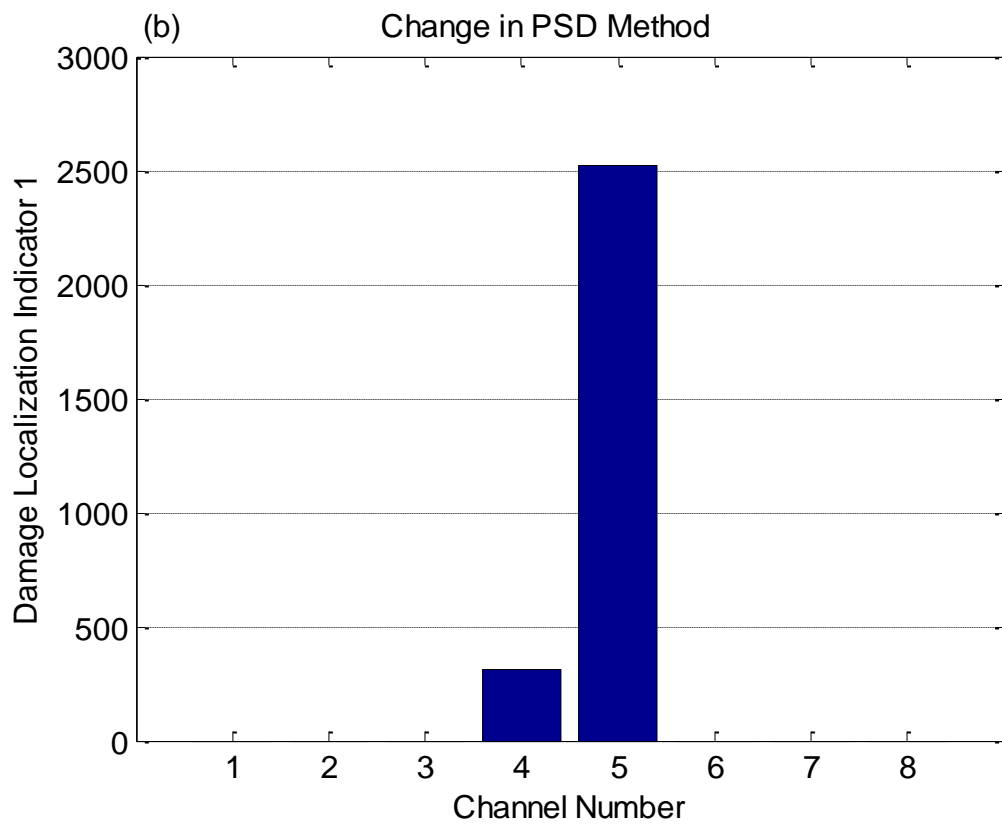
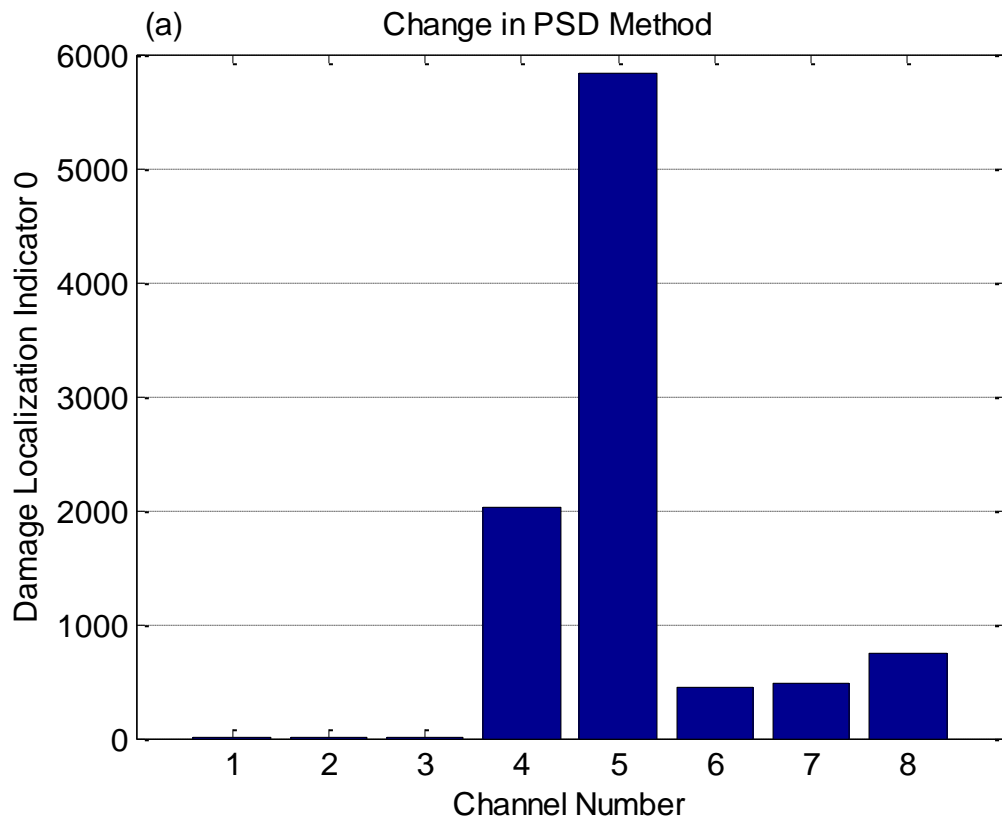


Figure 1 (b). Schematic elevation of the bridge, showing dimensions of the main girder and locations of instrumentation.



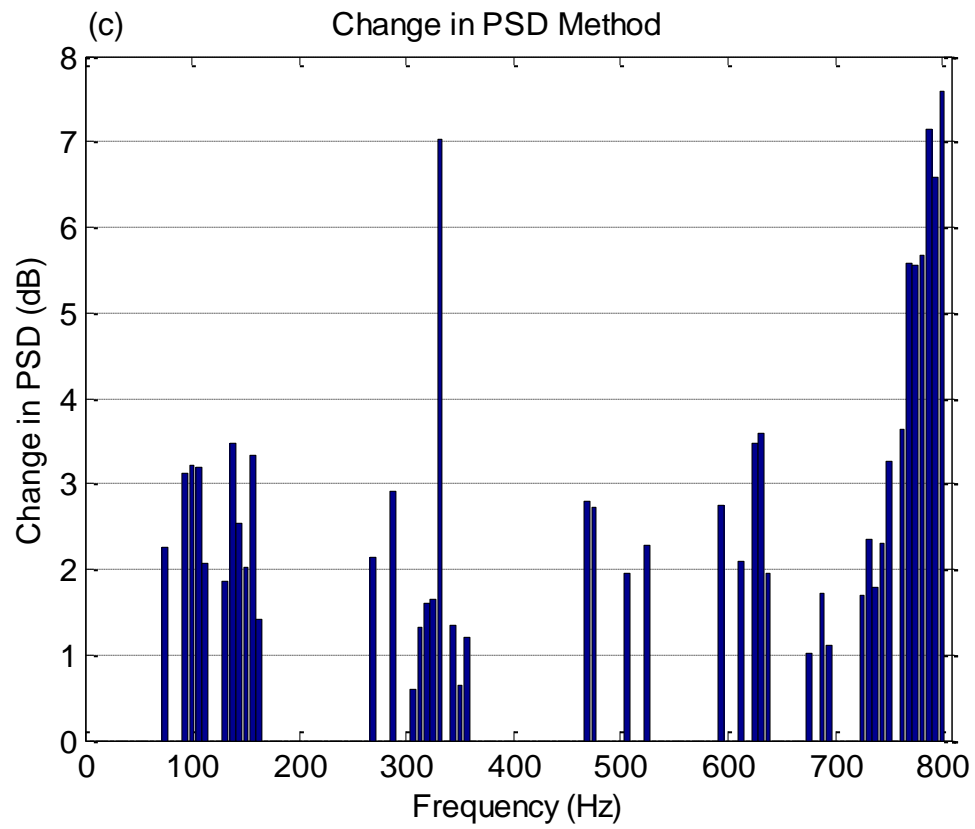


Figure 2. Damage identification results using PSD after removing one bolt from the stiffener near channel 5

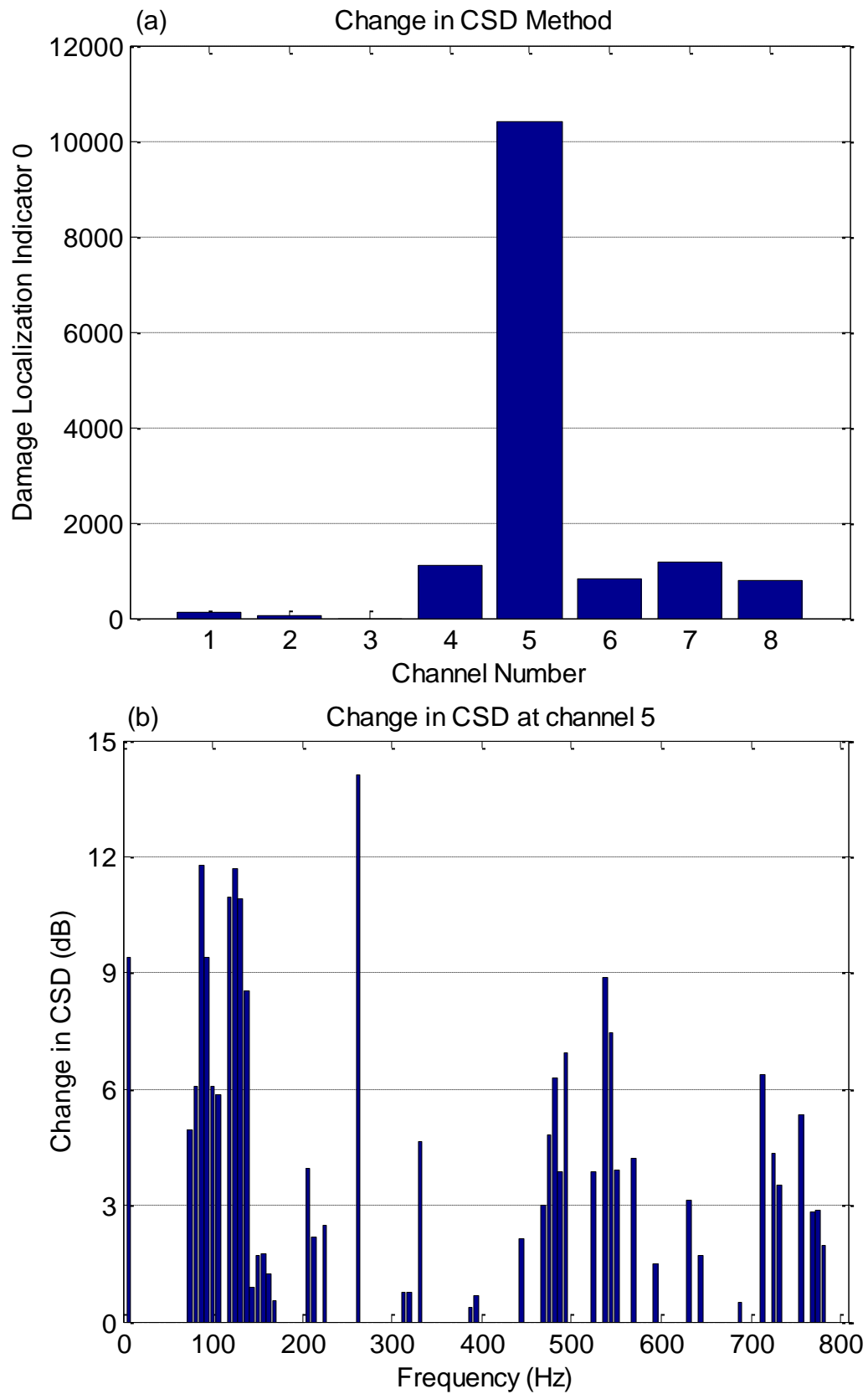


Figure 3. Damage identification results using CSD after removing one bolt from the stiffener near channel 5

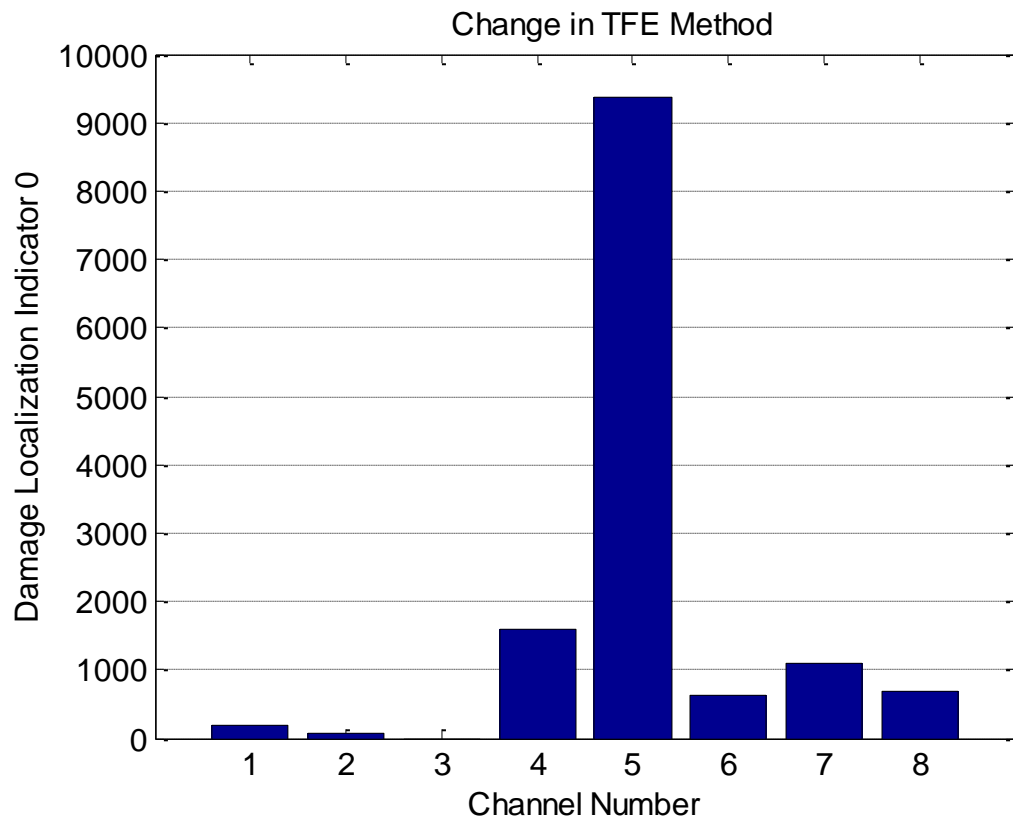


Figure 4. Damage identification results using TFE after removing one bolt from the stiffener near channel 5

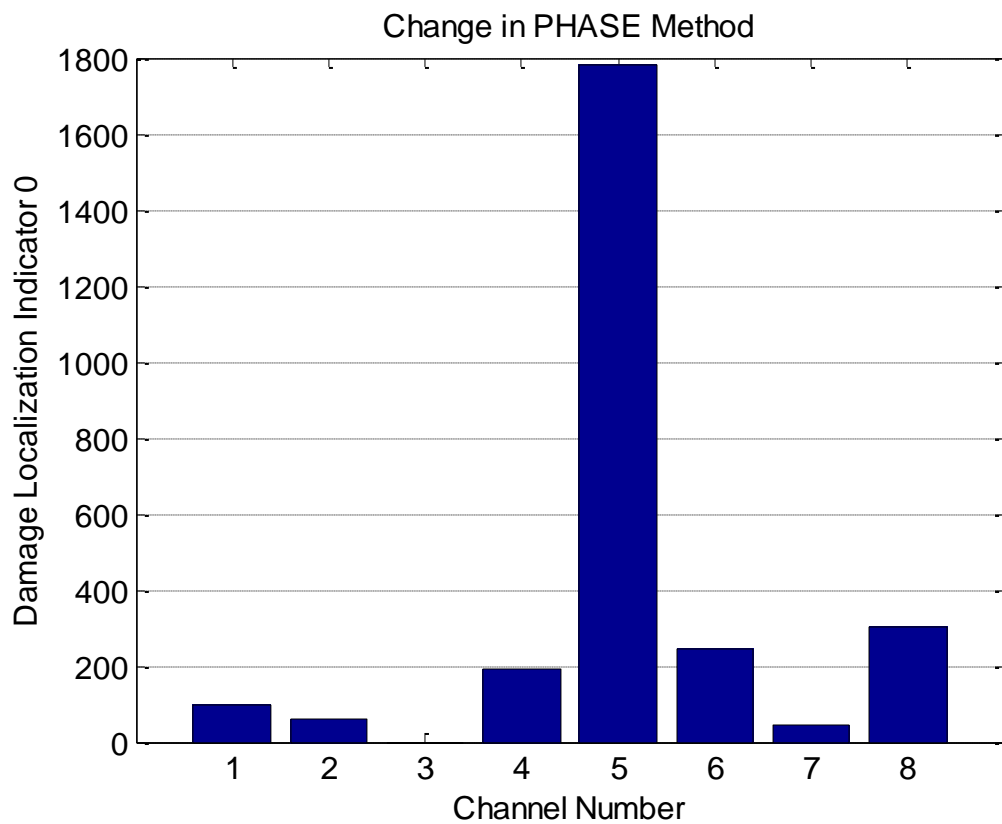


Figure 5. Damage identification results using Phase angle after removing one bolt from the stiffener near channel 5

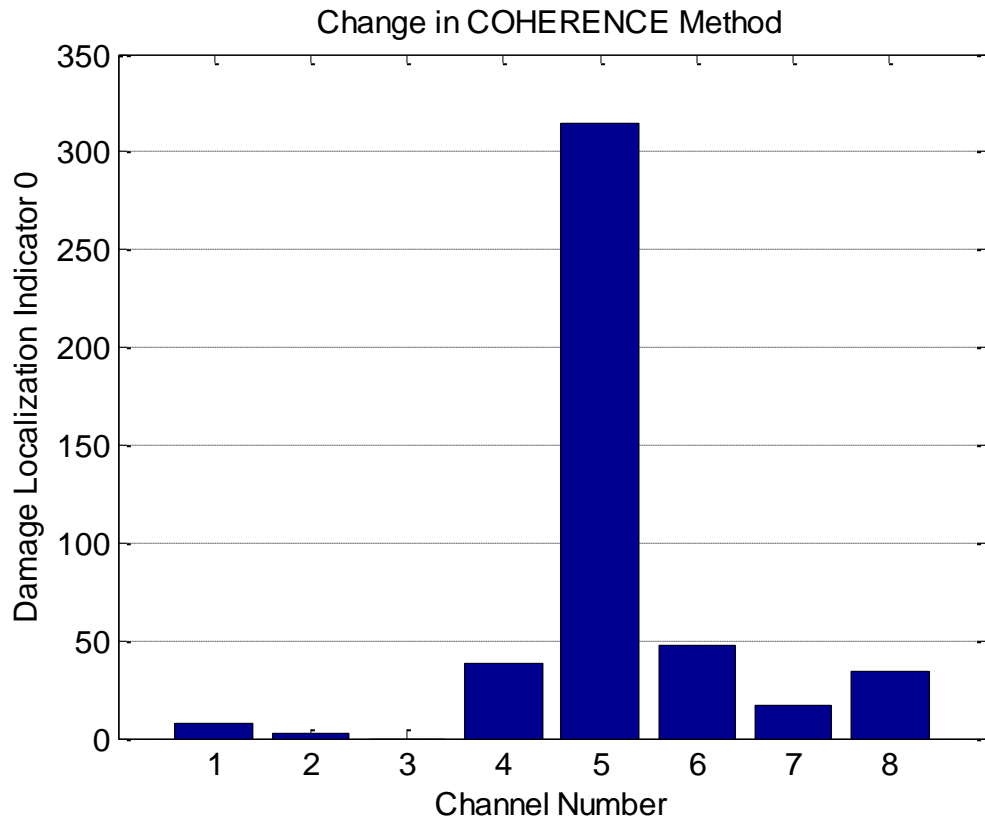
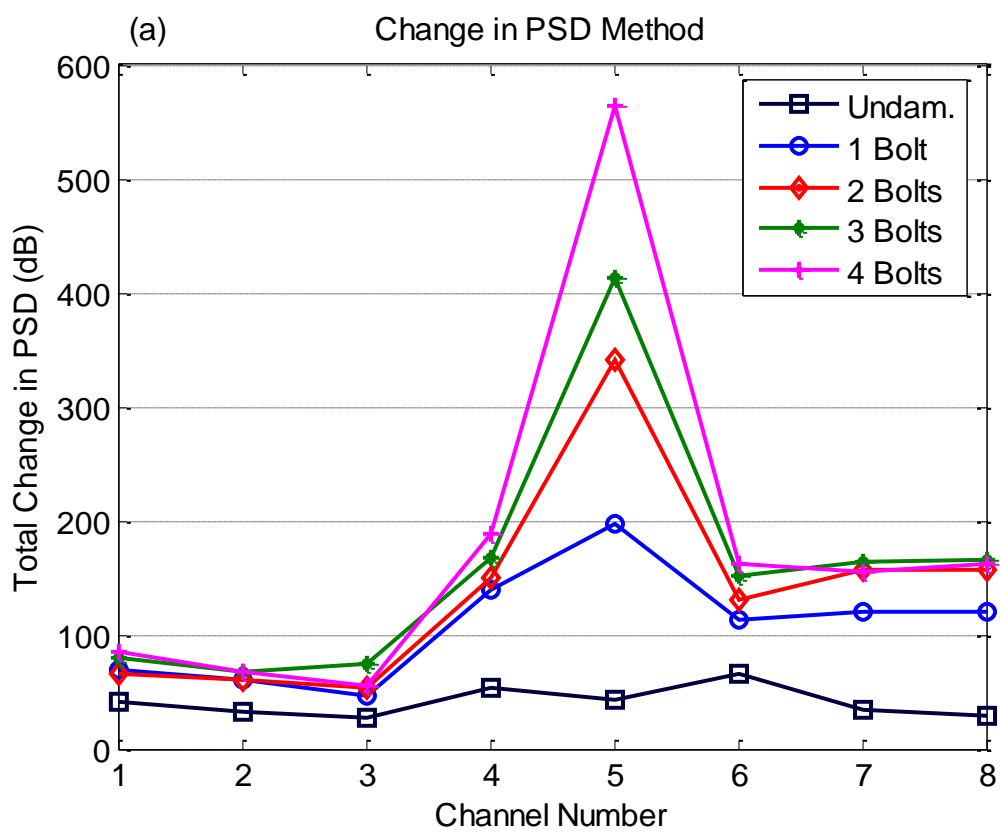
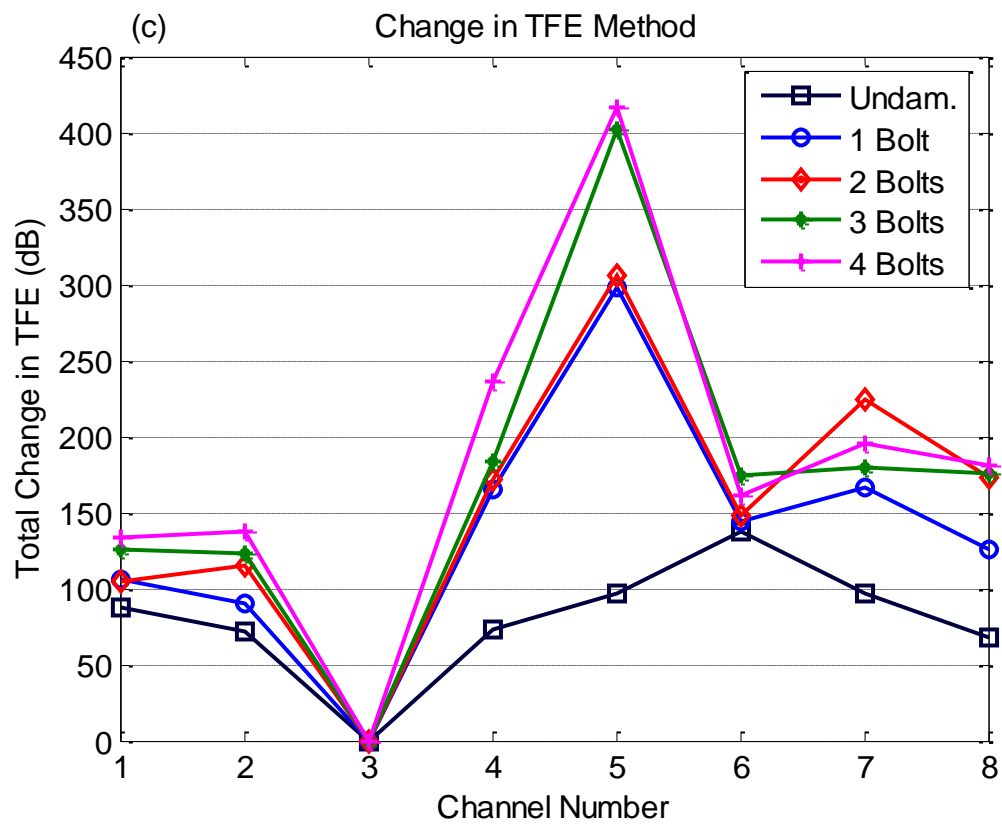
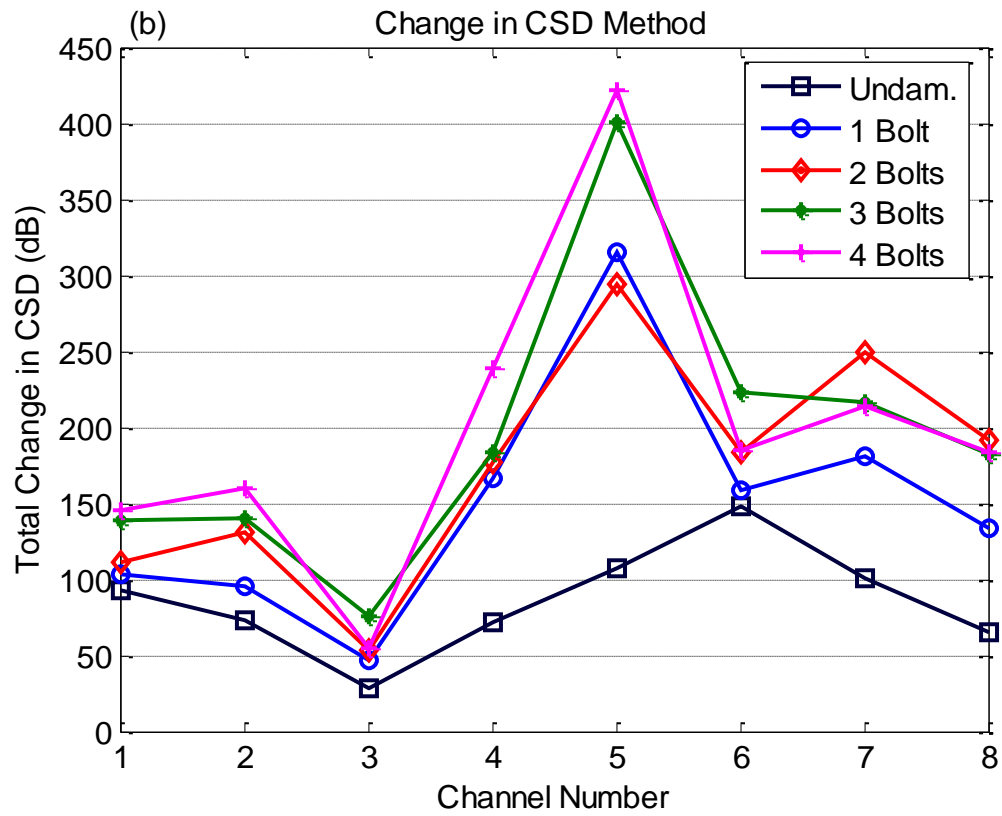


Figure 6. Damage identification results using Coherence function after removing one bolt from the stiffener near channel 5





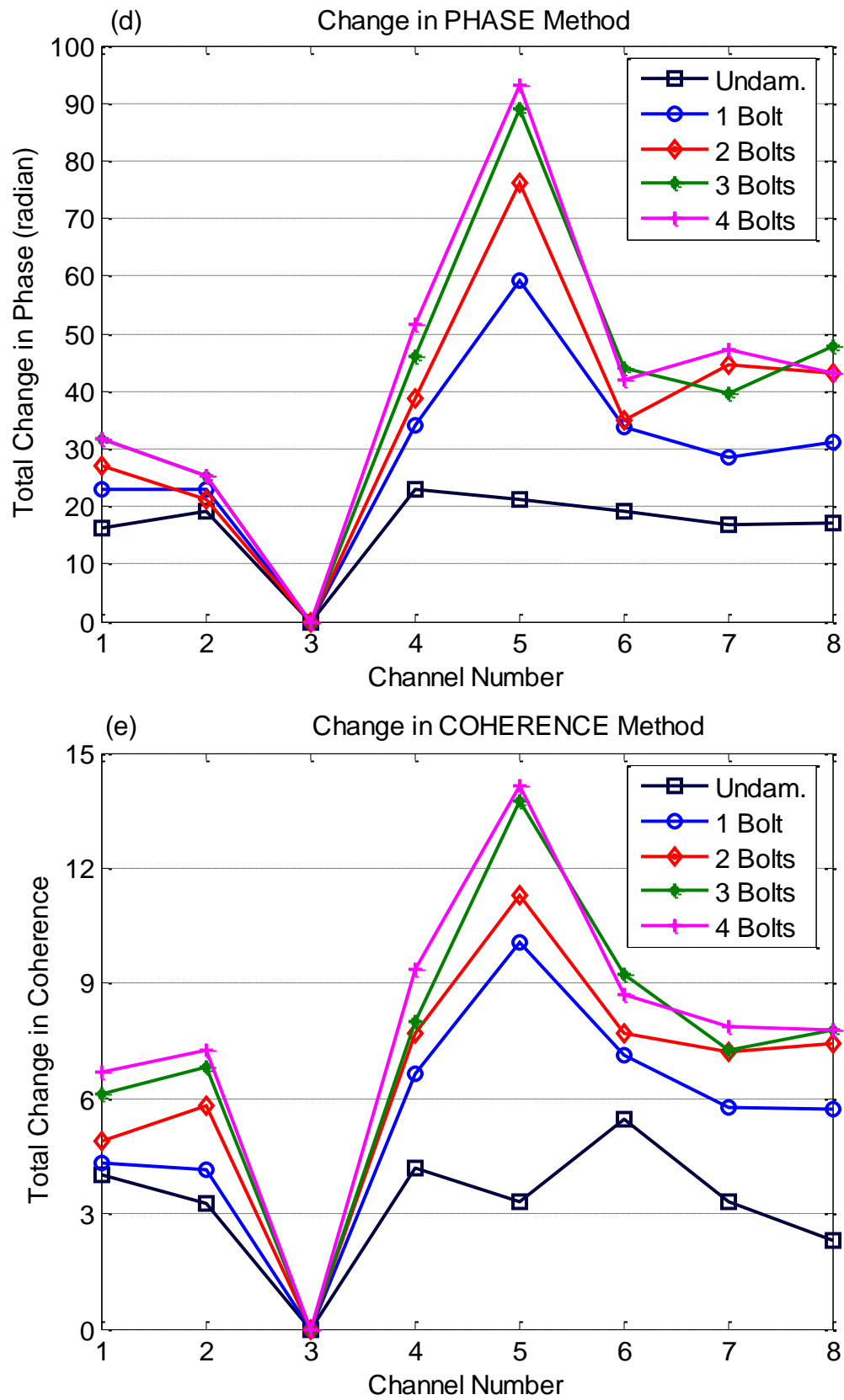
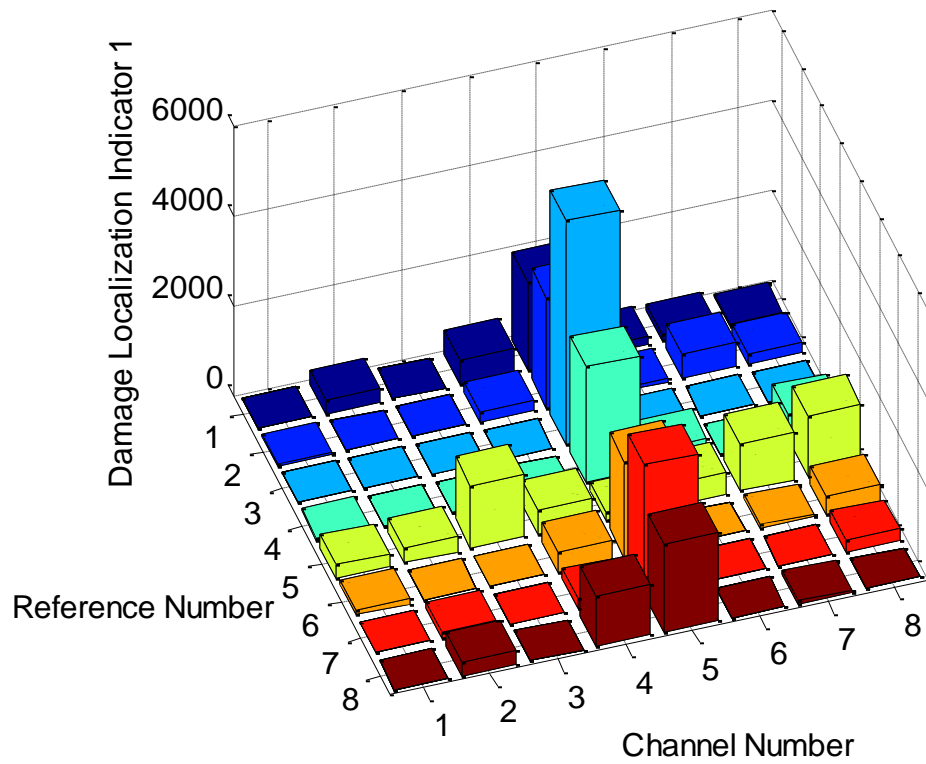


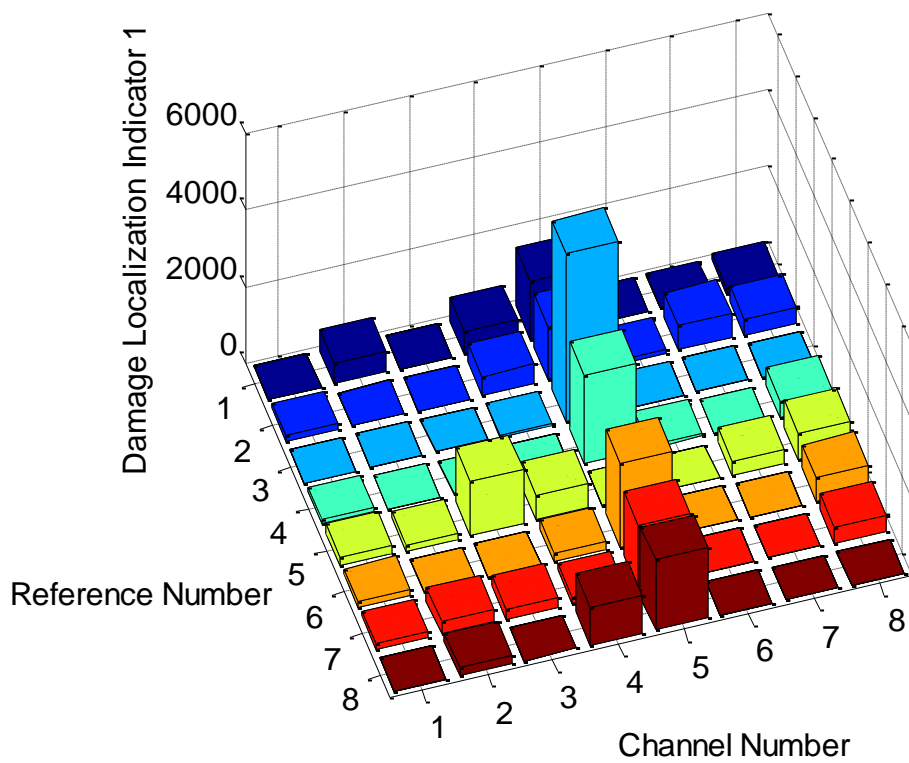
Figure 7. Monitoring the growth in damage using different spectral functions



(a) Change in CSD Method



(b) Change in TFE Method



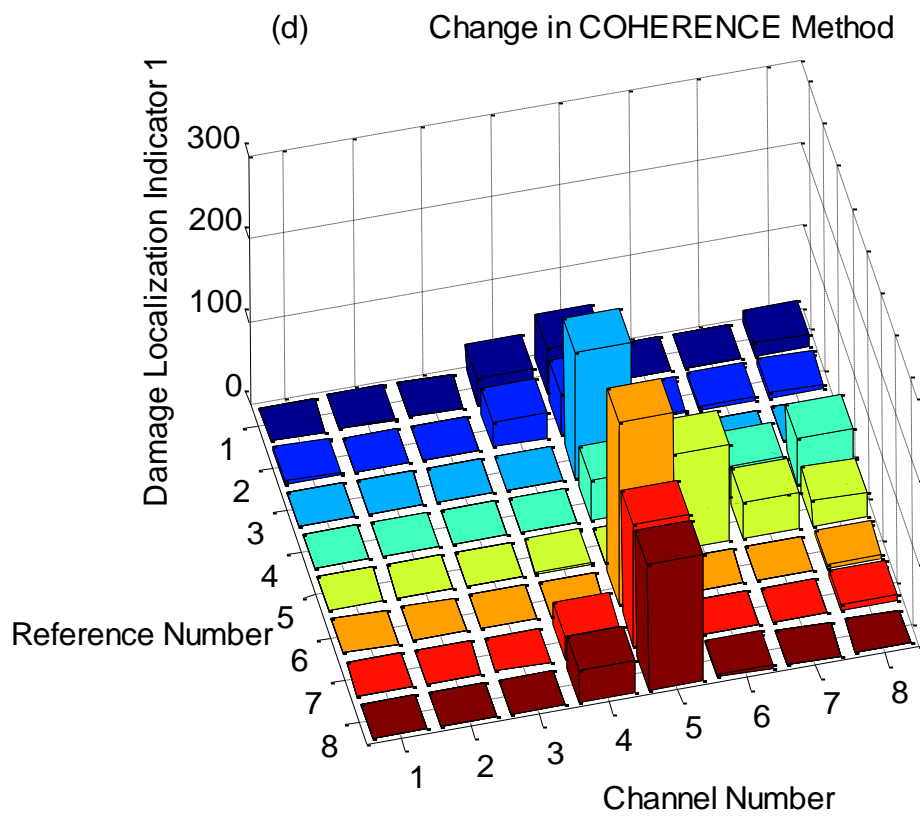
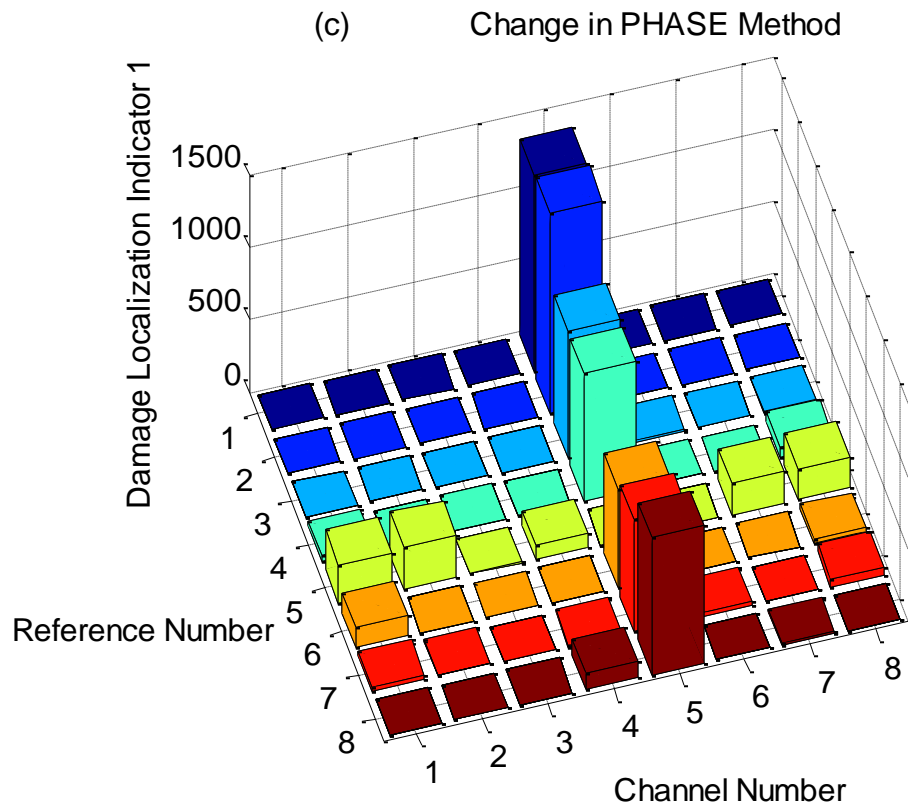


Figure 8. The effect of changing the location of the reference channel

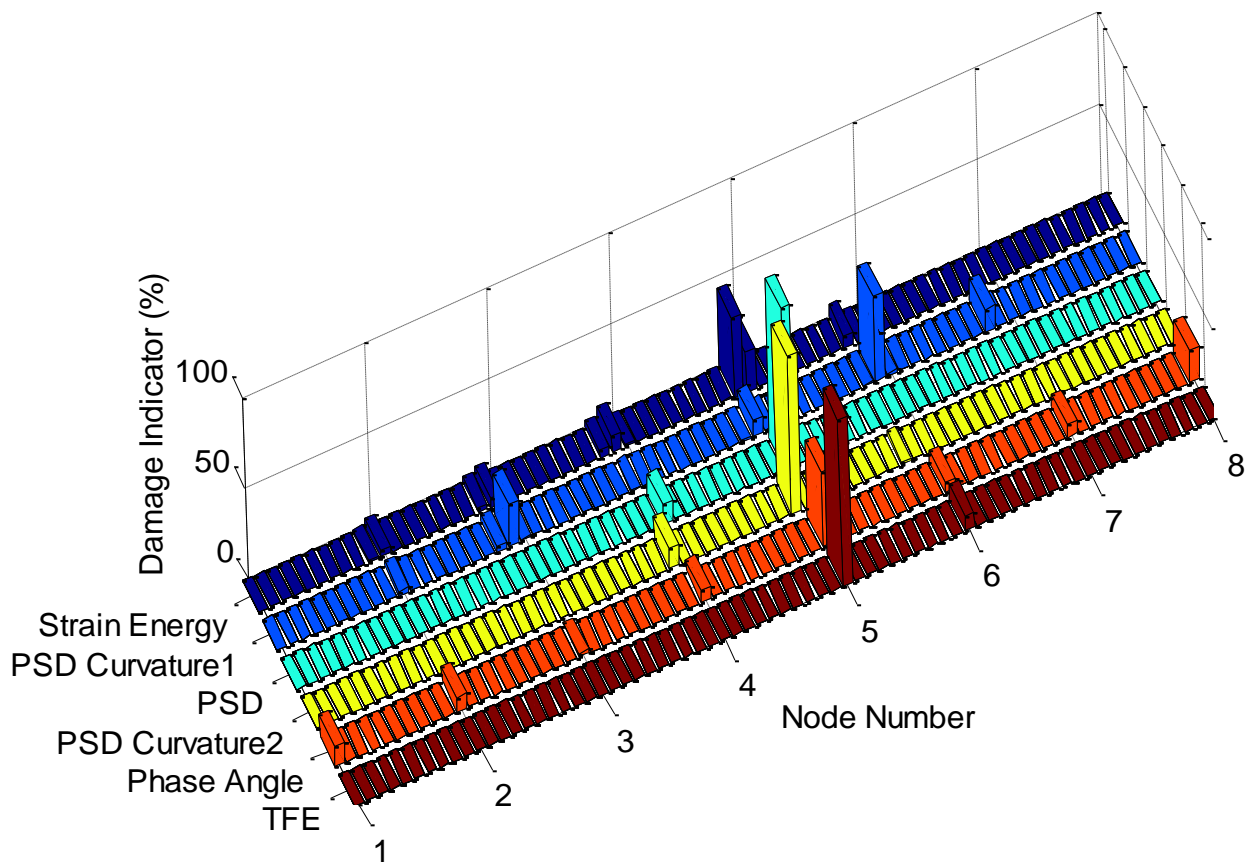


Figure 9. DIM applied to single damage case 1 (node 5)

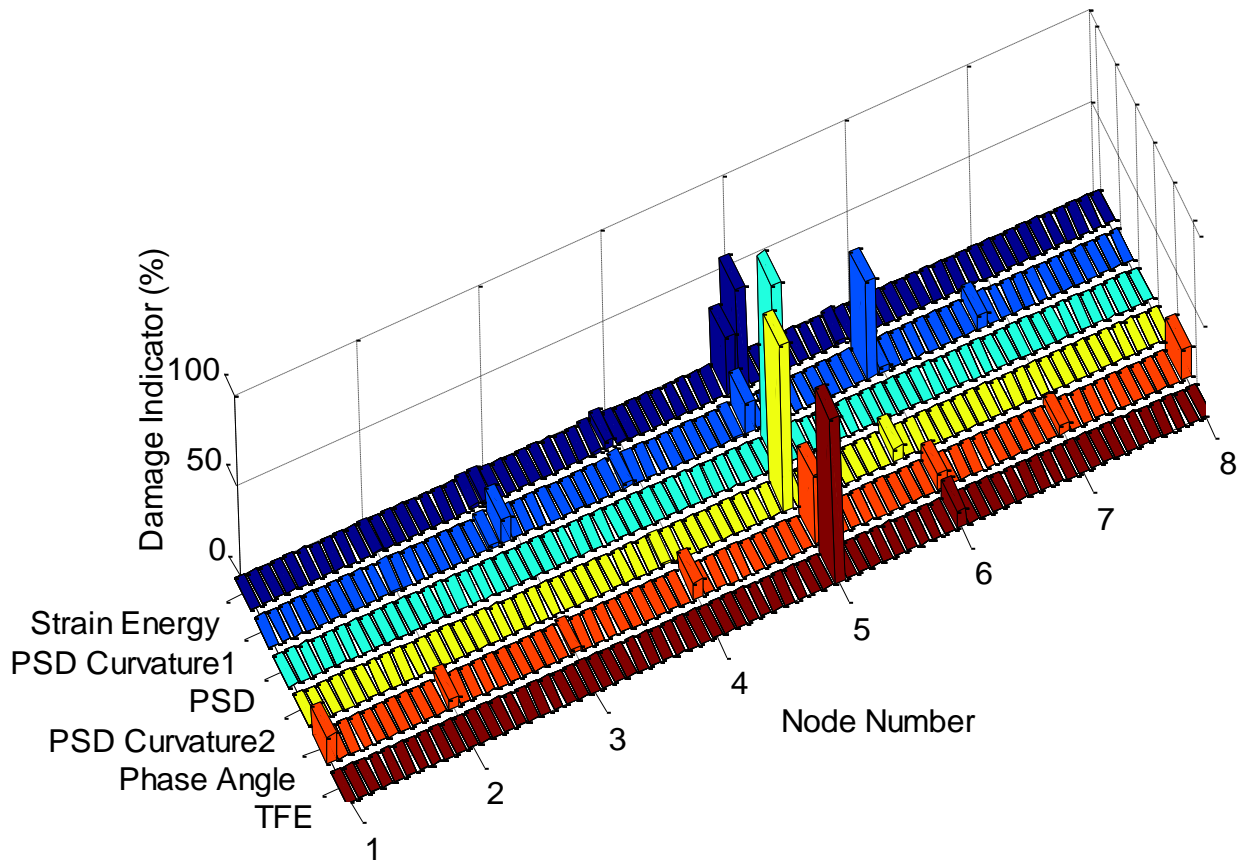


Figure 10. DIM applied to single damage case 2 (node 5)

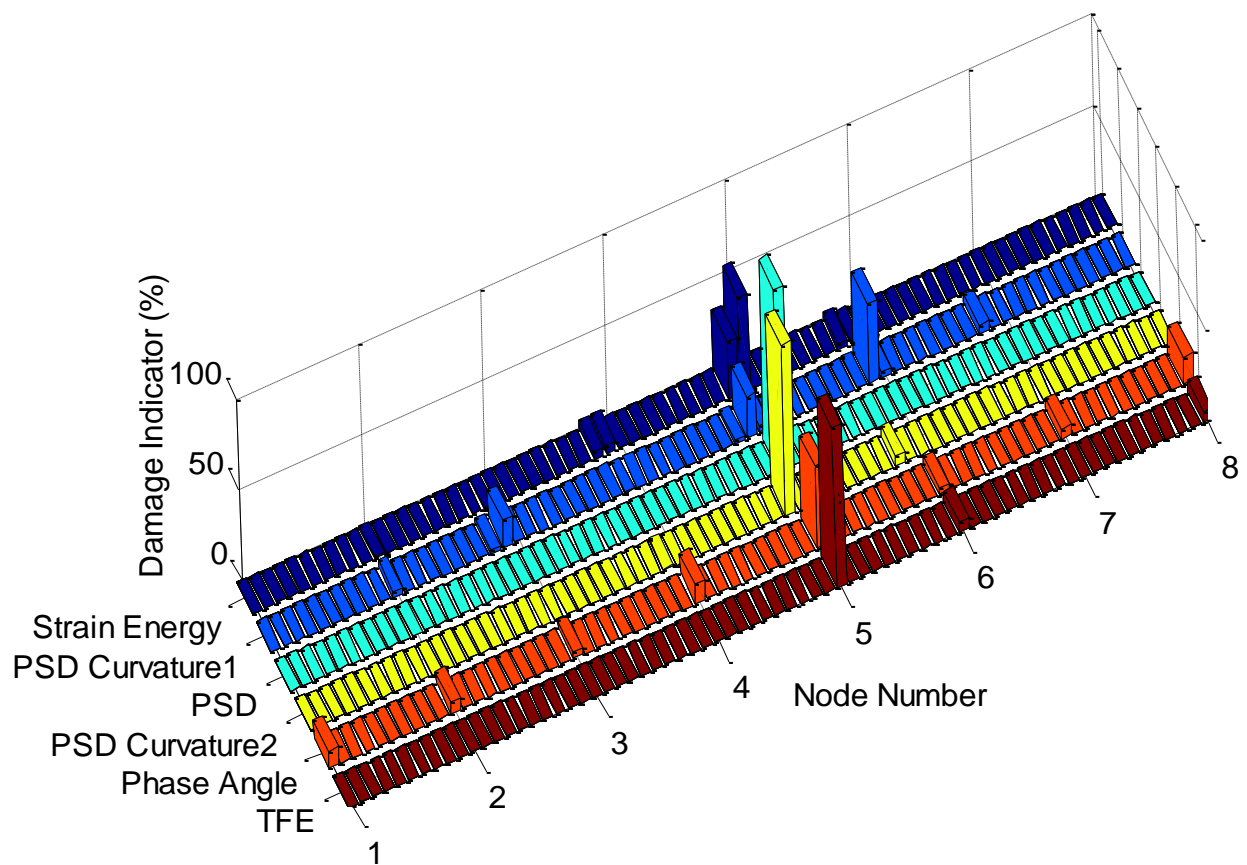


Figure 11. DIM applied to single damage case 3 (node 5)

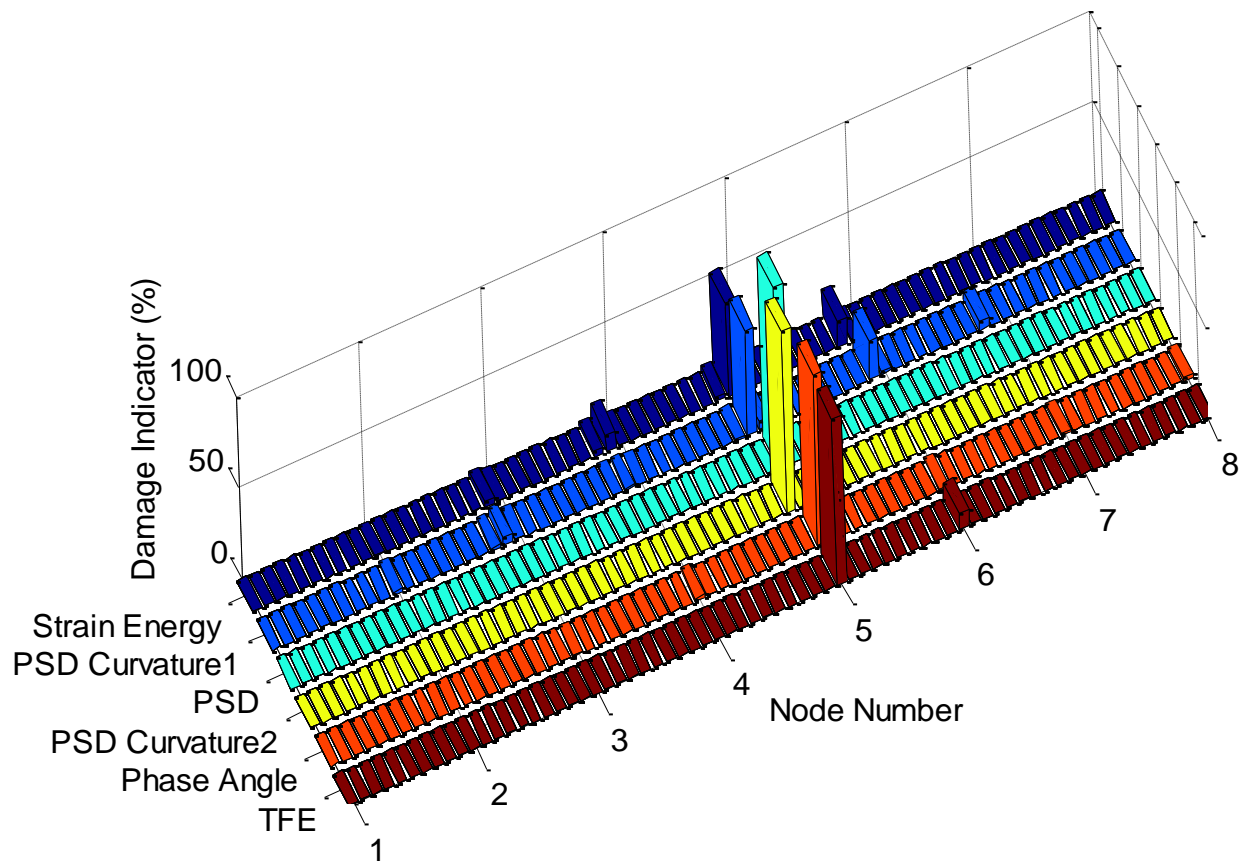


Figure 12. DIM applied to single damage case 4 (node 5)

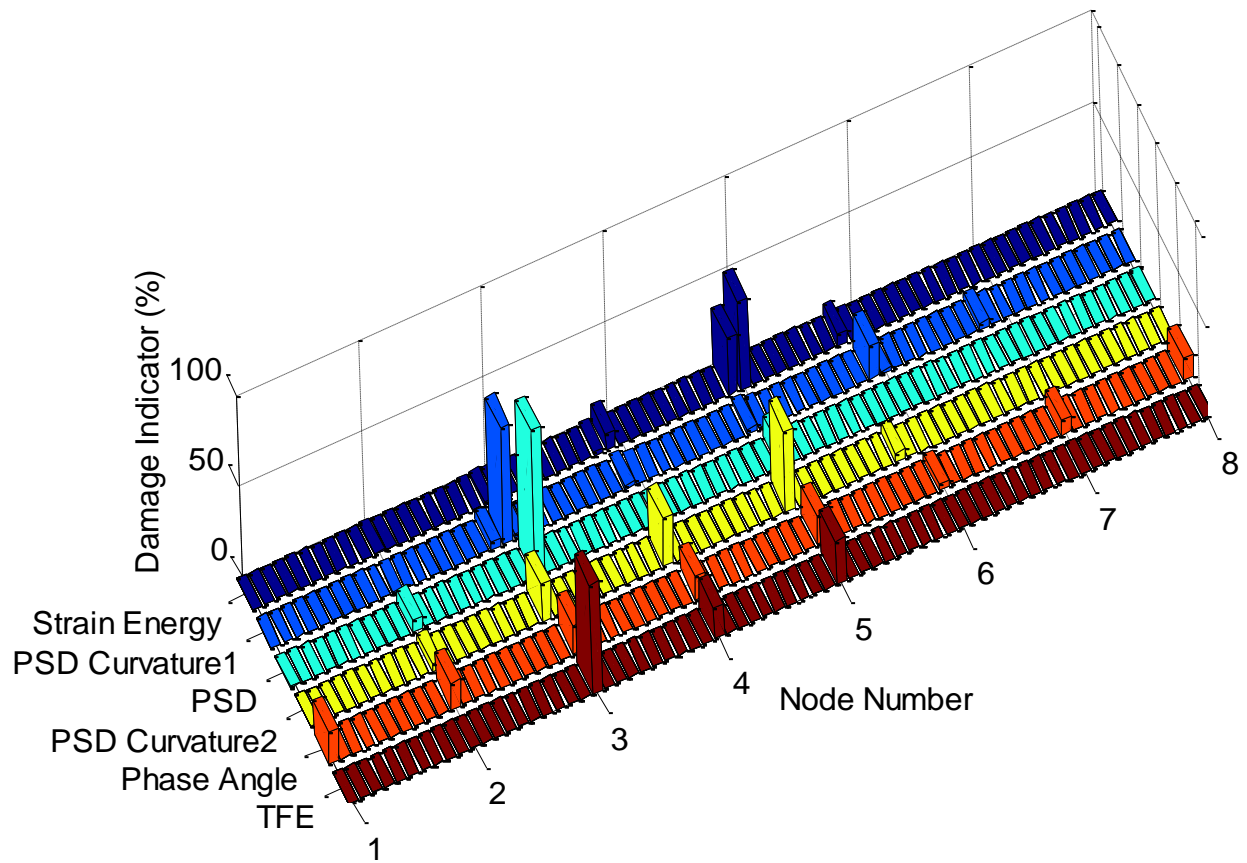


Figure 13. DIM applied to double damage case 1 (nodes 3 and 5)

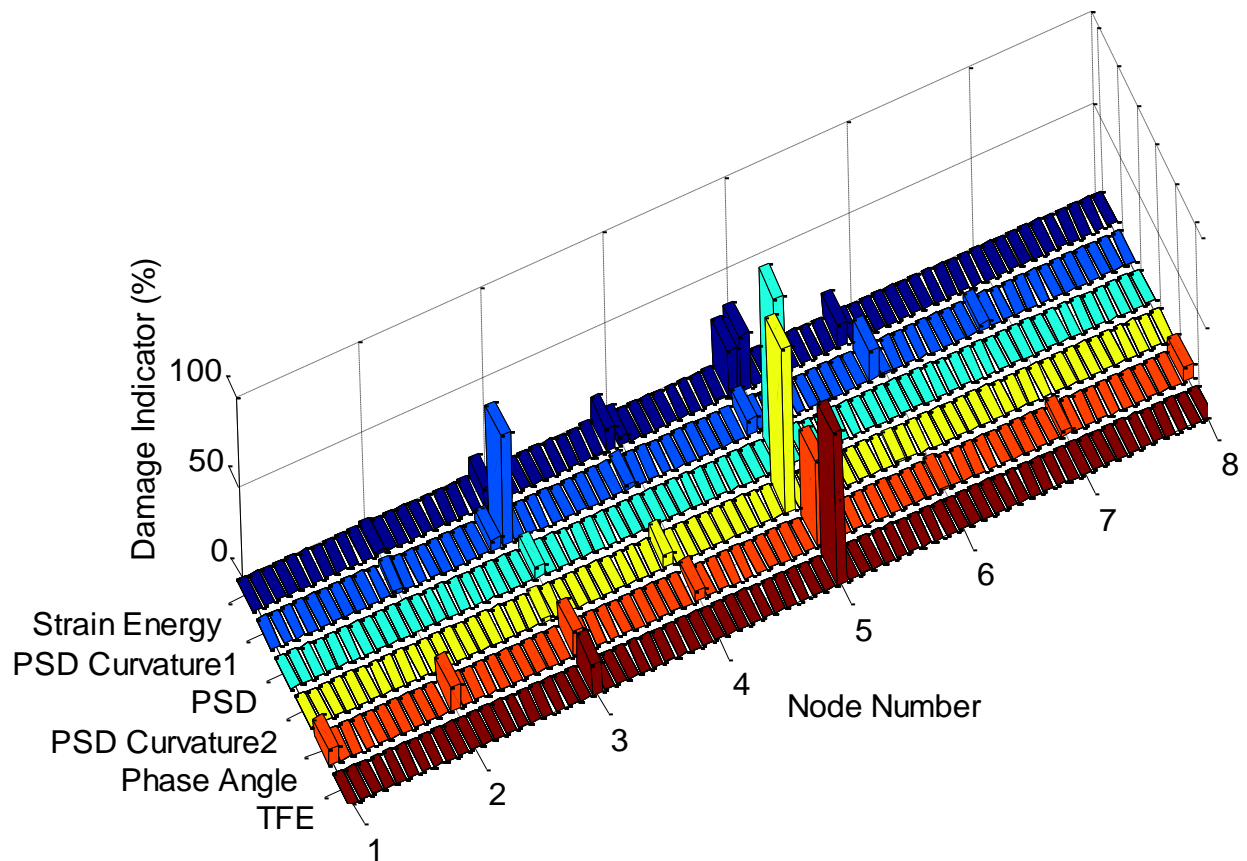


Figure 14. DIM applied to double damage case 2 (nodes 3 and 5)



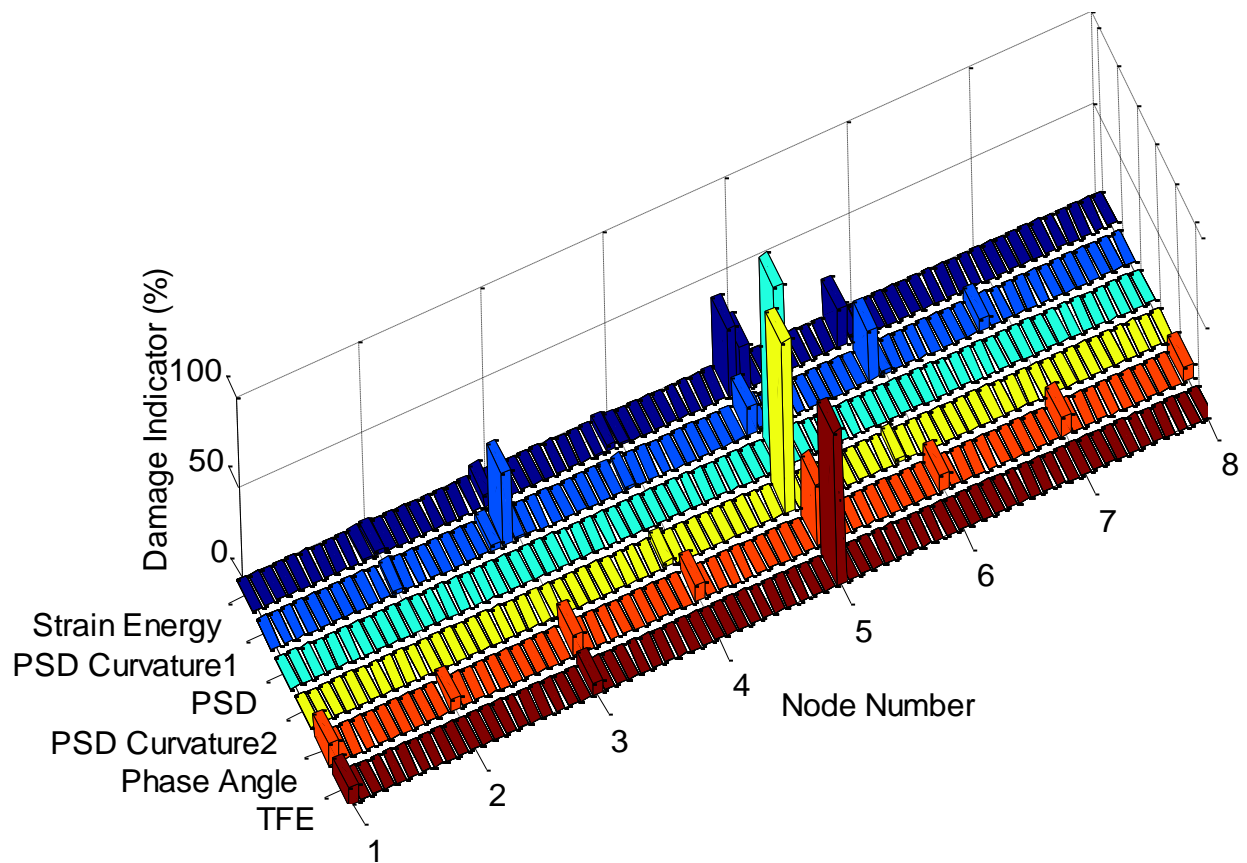


Figure 15. DIM applied to double damage case 3 (nodes 3 and 5)

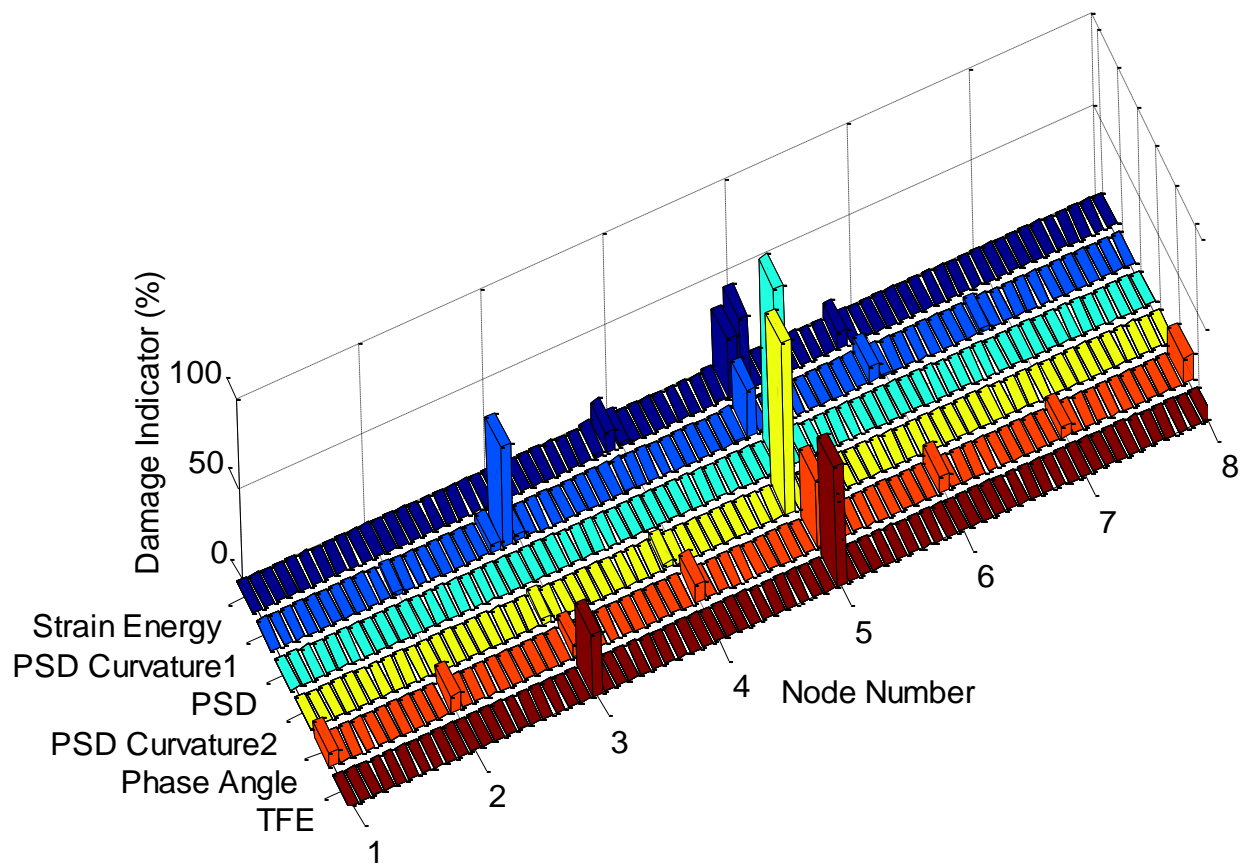


Figure 16. DIM applied to double damage case 4 (nodes 3 and 5)