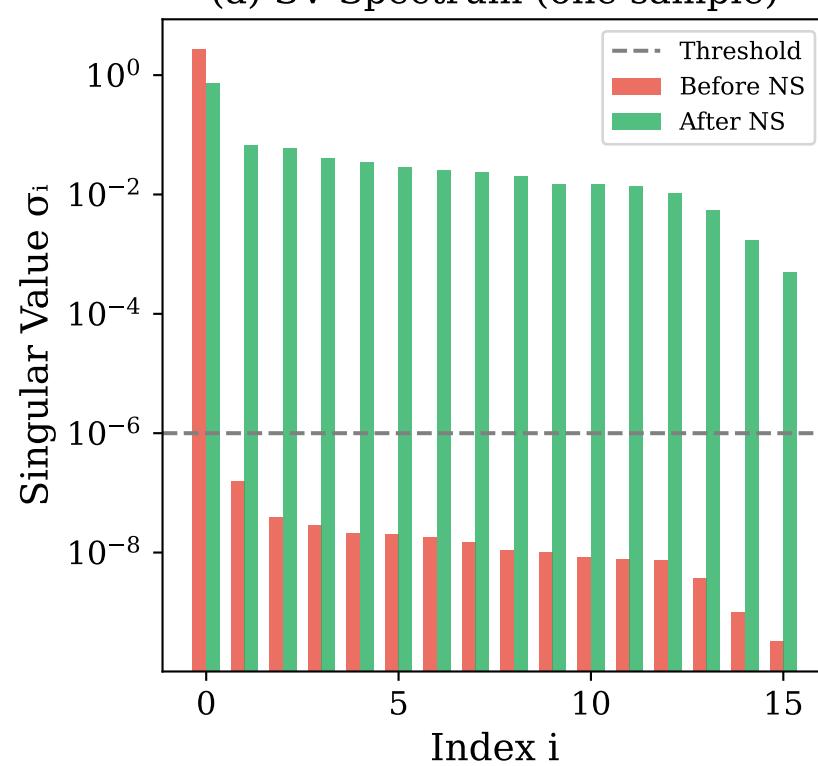
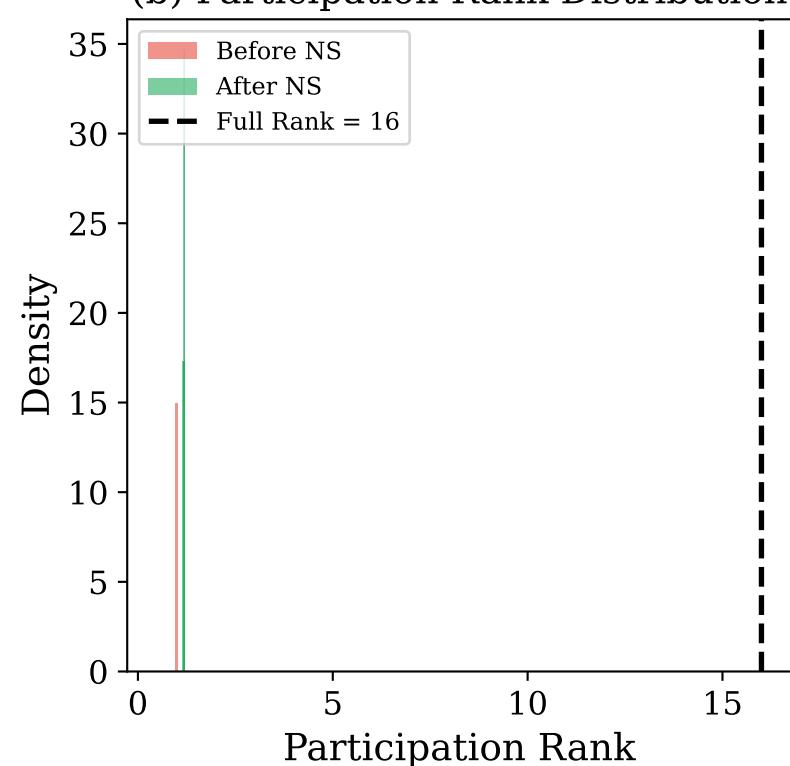


Newton-Schulz Transforms to Full Effective Rank (Real Forward Pass Data)

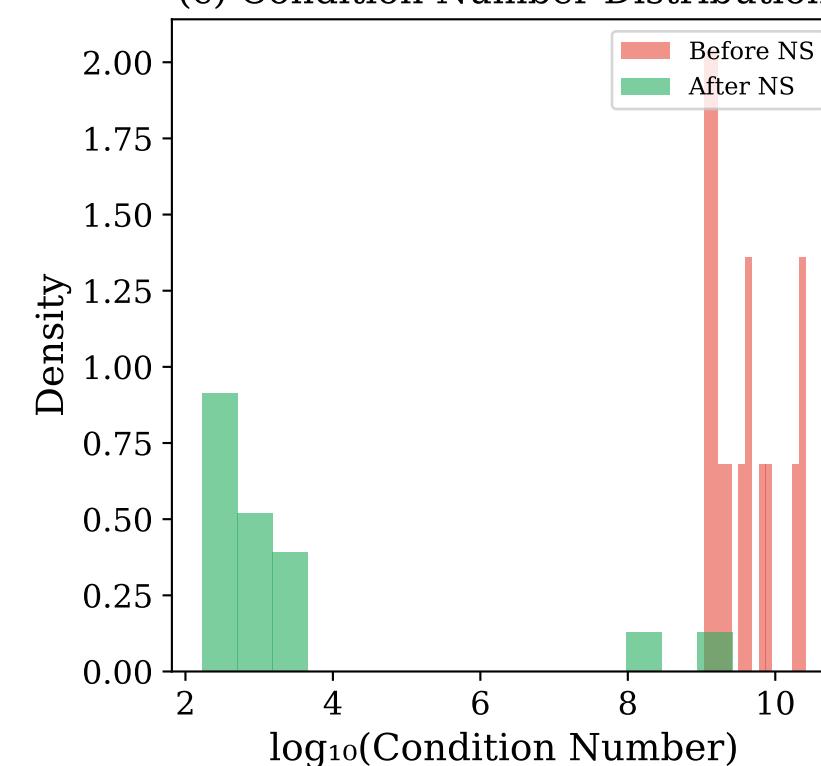
(a) SV Spectrum (one sample)



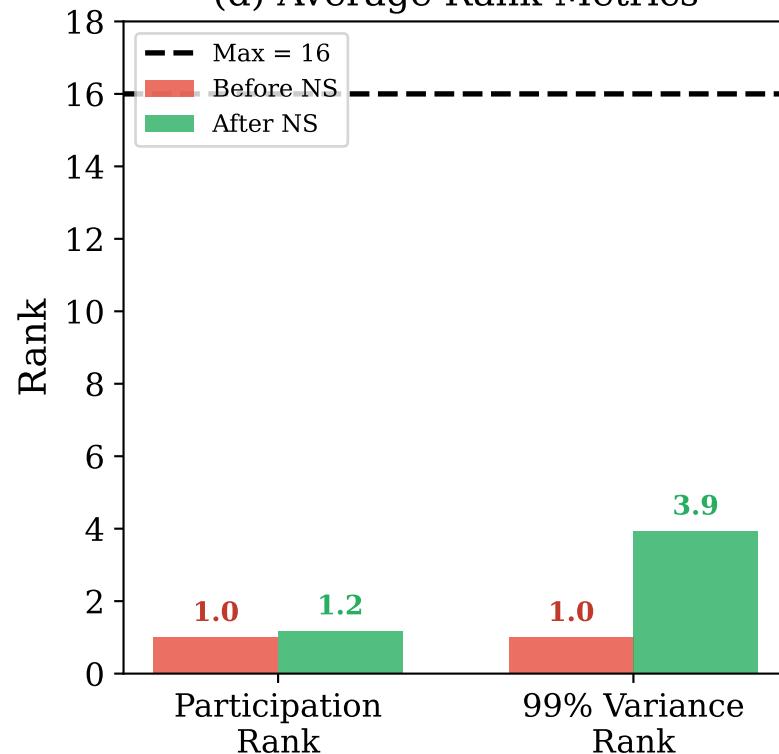
(b) Participation Rank Distribution



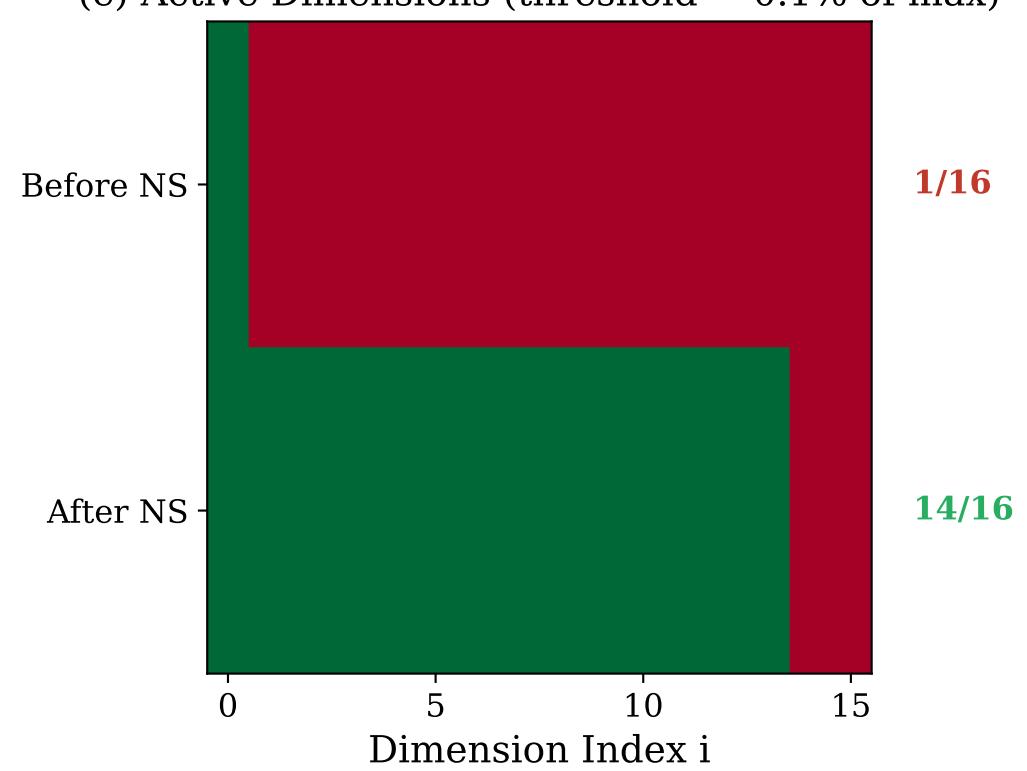
(c) Condition Number Distribution



(d) Average Rank Metrics



(e) Active Dimensions (threshold = 0.1% of max)



(f) Summary

FULL-RANK ANALYSIS SUMMARY

Matrix: $[128 \times 16]$, Max Rank = 16
Samples analyzed: 16

BEFORE Newton-Schulz:
Participation Rank: 1.0 / 16
99% Variance Rank: 1.0 / 16
Condition Number: 6.7×10^9

AFTER Newton-Schulz:
Participation Rank: 1.2 / 16 ← 7% of max!
99% Variance Rank: 3.9 / 16
Condition Number: 1.7×10^8

KEY RESULT:

Participation Rank: 1.0 → 1.2 |
Improvement: 1.2x more uniform SVs |
NS achieves 7% of theoretical full rank |