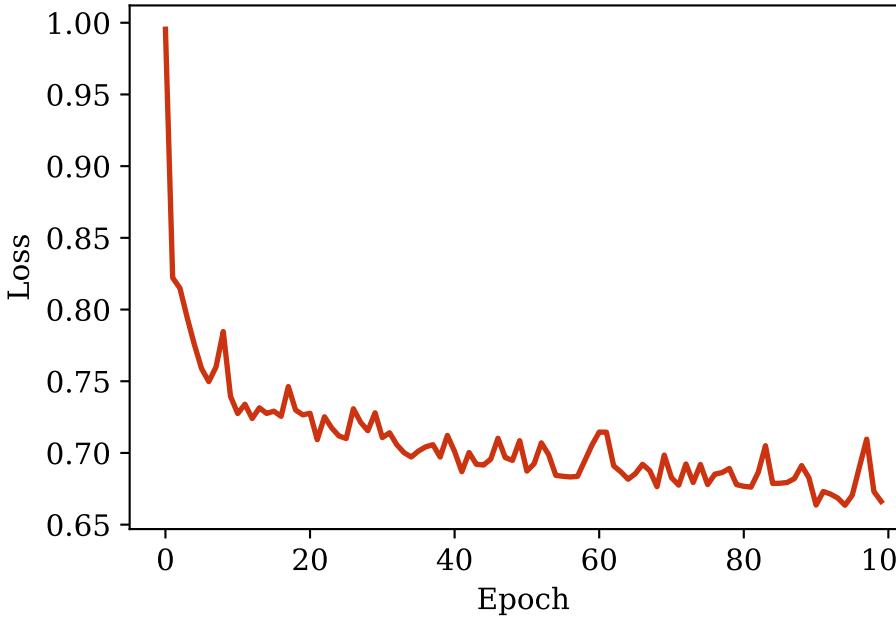
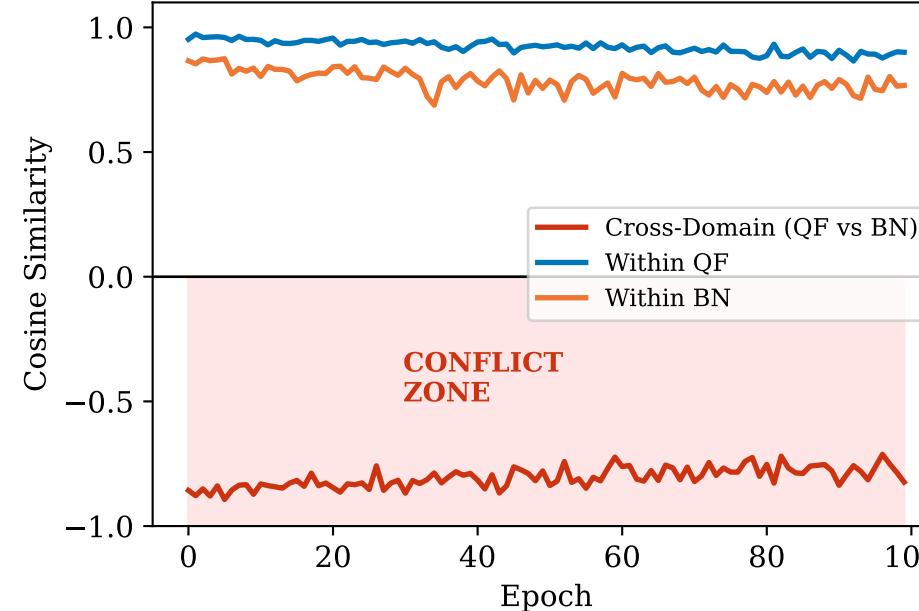


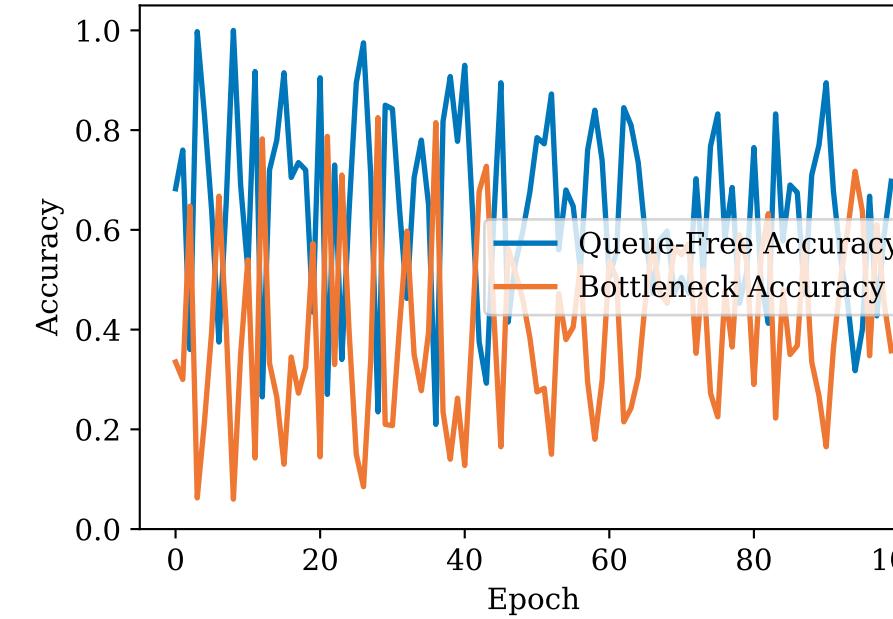
**(a) Training Loss
(Mixed QF + BN Data)**



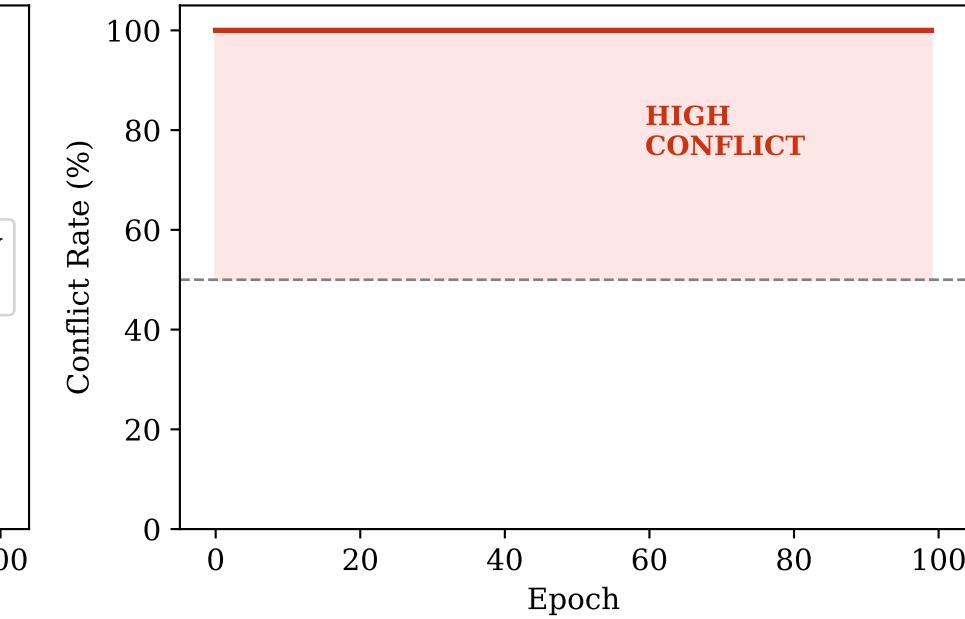
**(d) Within-Domain vs Cross-Domain
Gradient Similarity**



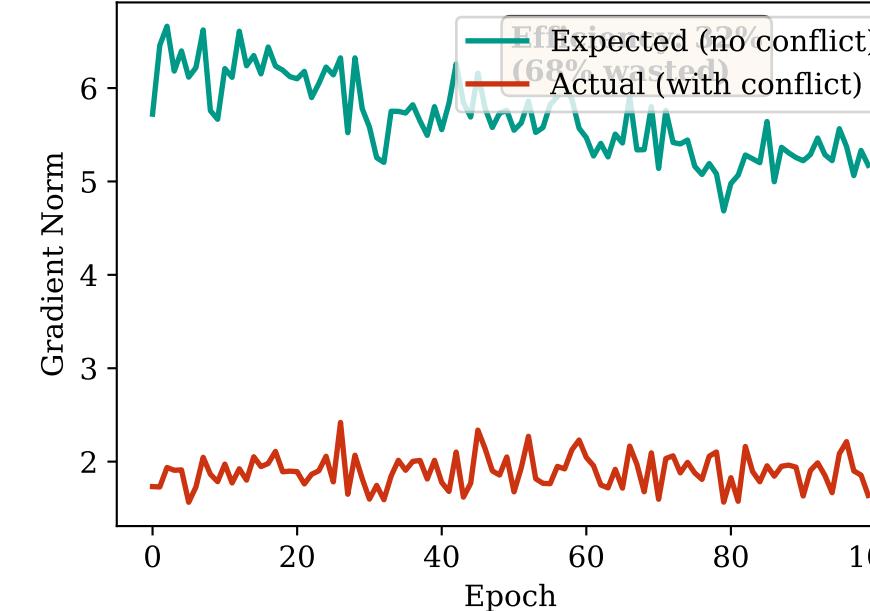
(b) Performance on Each Regime



**(c) Cross-Domain Conflict Rate
(QF vs BN in each batch)**



(e) Gradient Cancellation Effect



GRADIENT SIMILARITY COMPARISON

- Cross-Domain (QF vs BN):
- Avg Similarity: -0.805
 - Conflict Rate: 100%

- Within Queue-Free:
- Avg Similarity: +0.923

- Within Bottleneck:
- Avg Similarity: +0.787

CONCLUSION:
Cross-domain: NEGATIVE similarity
Within-domain: POSITIVE similarity

Conflict is DOMAIN-SPECIFIC,
not random noise!