Refined Version

In my dissertation, I rewrite this paper for better generality and technical soundness.

Recent Papers on Correlated Randomization

Around the same time this paper was completed, several other works on correlated randomization in differential privacy (DP) emerged, providing further insights into how correlations affect privacy and utility. Typical examples include:

[SaTML'25] Correlated Privacy Mechanisms for Differentially Private Distributed Mean Estimation: This is the most similar to our paper (JRR). It focuses on pairwise-correlated Gaussian noise between two users and the impact on the privacy-utility trade-off.

[PETS'26] Dropout-Robust Mechanisms for Differentially Private and Fully Decentralized Mean Estimation: This paper studies the multi-party computation (MPC) setting, where "correlated noise" refers to noise vectors that sum to zero across all communication rounds. Each party's noise is necessary for providing privacy against colluding parties, while these noises cancel out in the final aggregation.

Both papers also review additional works on other forms of correlated randomization.