Non-Coherent and Semi-Coherent Denoise-and-Forward Schemes for Two-Way Relaying

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Abstract:

We investigate non-coherent and semi-coherent schemes for physical-layer network coding in two-way relaying scenarios. We distinguish between scenarios without any channel knowledge requirements (non-coherent communication) and scenarios when either the relay or the users have receive channel knowledge (semi-coherent communication). We combine the paradigm of subspace-based communication developed for non-coherent point-to-point channels, with two-way relaying schemes based on physical-layer wireless network coding with denoise-and- forward (DNF). We demonstrate that denoising can be performed non-coherently and investigate the performance of the proposed schemes.