Corrections to "Achievable Rate Region under Joint Distributed Beamforming and Power Allocation for Two-Way Relay Networks"

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***Abstract*—This short correspondence serves as en errata to our paper titled, "Achievable rate region under joint distributed beamforming and power allocation for two-way relay networks," published in *IEEE Transactions on Wireless Communications,* vol. 11, no. 11, pp. 4026-4037, Nov. 2012. We do not present any novelty in this errata.**

***Index Terms*—Achievable rate region, joint distributed beamforming, power allocation, two-way relay networks.**

The definition of $\kappa(p_1)$ in the first column of Page 4032 is hereby corrected as

$$\kappa(p_1) = \left(\mathbf{h}^H \left(\mathbf{A}^{\frac{1}{2}}(p_1) + (P-2p_1)\mathbf{A}^{-\frac{1}{2}}(p_1)\mathbf{D}_2\right)^{-2}\mathbf{h}\right)^{-1/2}$$
$$= \left(\mathbf{h}^H \left(2p_1\mathbf{D}_1 + \mathbf{I}\right)\left(2p_1\mathbf{D}_1 + (P-2p_1)\mathbf{D}_2 + \mathbf{I}\right)^{-2}\mathbf{h}\right)^{-1/2}.$$

Correspondingly, the definition of $\kappa(p_1^{\mathrm{o}})$ after (43) should be corrected as

$$\kappa(p_1^{\mathrm{o}}) = \left(\mathbf{h}^H \left(\mathbf{I} + 2p_1^{\mathrm{o}}\mathbf{D}_1\right)\left(2p_1^{\mathrm{o}}\mathbf{D}_1 + 2p_2^{\mathrm{o}}\mathbf{D}_2 + \mathbf{I}\right)^{-2}\mathbf{h}\right)^{-1/2}.$$

Similarly, $\tilde{\kappa}(p_2^{\mathrm{o}})$ at the top of the second column of Page 4033 is hereby corrected as

$$\tilde{\kappa}(p_2^{\mathrm{o}}) \triangleq \left(\mathbf{h}^H \left(\mathbf{I} + 2p_2^{\mathrm{o}}\mathbf{D}_2\right)\left(2p_1^{\mathrm{o}}\mathbf{D}_1 + 2p_2^{\mathrm{o}}\mathbf{D}_2 + \mathbf{I}\right)^{-2}\mathbf{h}\right)^{-1/2}.$$

The equation at the top of the second column of Page 4032 is corrected as

$$f(p_1) \triangleq \frac{\partial\phi(p_1)}{\partial p_1} = (\tilde{p}-2p_1)\mathbf{h}^H(2p_1\mathbf{D}_1 + \mathbf{I} + \tilde{p}\mathbf{D}_2)^{-1}\mathbf{h} - p_1\tilde{p}\mathbf{h}^H(2p_1\mathbf{D}_1 + \mathbf{I} + \tilde{p}\mathbf{D}_2)^{-2}(2\mathbf{D}_1 - 2\mathbf{D}_2)\mathbf{h}.$$

The first equation at top of the first column of Page 4033 (in Algorithm 1) is corrected as

$$f(p_1) \triangleq (\tilde{p}-2p_1)\mathbf{h}^H(2p_1\mathbf{D}_1 + \mathbf{I} + \tilde{p}\mathbf{D}_2)^{-1}\mathbf{h} - p_1\tilde{p}\mathbf{h}^H(2p_1\mathbf{D}_1 + \mathbf{I} + \tilde{p}\mathbf{D}_2)^{-2}(2\mathbf{D}_1 - 2\mathbf{D}_2)\mathbf{h}.$$

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