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Marco Di Renzo

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Corrections to “On Transmit–Diversity for Spatial Modulation MIMO: Impact of Spatial–Constellation Diagram and Shaping Filters at the Transmitter”

Marco Di Renzo, Member, IEEE

Abstract

In this comment, we correct some typographical errors in a paper that has recently appeared in this Transactions [1].

Index Terms


I. INTRODUCTION

In [1], the authors have proposed a new unified space–time–coded transceiver for Multiple–Input–Multiple–Output (MIMO) systems that exploits the recently proposed concept of Spatial Modulation (SM). Furthermore, the authors have introduced a Maximum–Likelihood (ML–) optimum single–stream demodulator for the proposed transmission scheme. In the present comment, we correct some typographical errors in some equations in [1, Sec. VI].

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M. Di Renzo is with the Laboratory of Signals and Systems (L2S), French National Center for Scientific Research (CNRS) – École Supéérieure d’Électricité (SUPÉLEC) – University of Paris–Sud 11, 3 rue Joliot–Curie, 91192 Gif–sur–Yvette (Paris), France, E–Mail: marco.direnzo@lss.supelec.fr.
A. Corrections to Section VI

The correct expression of [1, Eq. (15)] is as follows:

\[(\hat{\alpha}, \hat{\mu}_1, \hat{\mu}_2) = \arg \min_{\mathbf{a}(\alpha) \in \mathcal{A}, \hat{\mu}_1 \in \mathcal{M}, \hat{\mu}_2 \in \mathcal{M}} \{\Lambda_1(\hat{\alpha}, \hat{\mu}_1) + \Lambda_2(\hat{\alpha}, \hat{\mu}_2)\}\]

\[
\begin{align*}
(1) & \Rightarrow \\
& \arg \min_{\mathbf{a}(\alpha) \in \mathcal{A}} \left\{ \min_{\hat{\mu}_1 \in \mathcal{M}} \{\Lambda_1(\hat{\alpha}, \hat{\mu}_1) + \Lambda_2(\hat{\alpha}, \hat{\mu}_2)\} \rightarrow \hat{\alpha} \\
& \arg \min_{\hat{\mu}_1 \in \mathcal{M}} \{\Lambda_1(\hat{\alpha}, \hat{\mu}_1) \rightarrow \hat{\mu}_1 \} \\
& \arg \min_{\hat{\mu}_2 \in \mathcal{M}} \{\Lambda_2(\hat{\alpha}, \hat{\mu}_2) \rightarrow \hat{\mu}_2\} \end{align*}
\]

(1)

The mistakes originated from typing \(\arg \min \{\cdot\}\) instead of \(\min \{\cdot\}\).

The correct expression of [1, Eq. (17)] is as follows:

\[\hat{\alpha} = \arg \min_{\mathbf{a}(\alpha) \in \mathcal{A}} \{\Lambda_1(\hat{\alpha}, \hat{\mu}_1(\hat{\alpha})) + \Lambda_2(\hat{\alpha}, \hat{\mu}_2(\hat{\alpha}))\}\]

(2)

The mistakes originated from typing \(\hat{\mu}_i(\hat{\alpha})\) instead of \(\Lambda_i(\hat{\alpha}, \hat{\mu}_i(\hat{\alpha}))\) for \(i = 1, 2\).

The correct expression of [1, Eq. (19)] is as follows:

\[
\begin{align*}
\hat{\mu}_m(\hat{\alpha})|_{m=1,2,\ldots,N_M} &= \arg \min_{\bar{\mu}_m \in \mathcal{M}} \left\{ \sum_{r=1}^{N_T} \left( (E_S/2) \left( \sum_{t=1}^{N_T} |\mathbf{H}_{r,t}|^2 \right) |\bar{\mu}_m|^2 - 2 \sqrt{E_S/2} \Re \{\psi_{m}^{(H_S)}(\mathbf{t}, \tilde{\mathbf{e}}, r) \tilde{\mu}_m^* \} \right) \right\} \\
\hat{\alpha} &= \arg \min_{\mathbf{a}(\alpha) \in \mathcal{A}} \left\{ \sum_{m=1}^{N_M} \Lambda_m(\hat{\alpha}, \hat{\mu}_m(\hat{\alpha})) \right\} \\
\hat{\mu}_m|_{m=1,2,\ldots,N_M} &= \hat{\mu}_m(\hat{\alpha} = \hat{\alpha})|_{m=1,2,\ldots,N_M} \\
\end{align*}
\]

(3)

which follows from the correct expression in (2).

II. Conclusion

In this comment, some typographical errors in [1] have been corrected. It is worth emphasizing that the numerical results in [1] are obtained by using the correct equations in (1)–(3).

REFERENCES