

4th International Conference and Business Expo on

Wireless, Telecommunication & IoT

July 19-20, 2018 | London, UK



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An efficient channel estimation for massive MIMO applied to 5G systems

Massive multiple-input and multiple-output (MIMO) schemes involving several tens or even hundreds of antenna elements are expected to be central technologies for 5G systems. This can lead array power gain increments proportional to the number of antennas. Pilots can be employed for the purpose of performing channel estimation. Nevertheless, pilot contamination may occur in multi-user scenarios, namely due to co-channel interference, which may compromise estimation, even when orthogonal sequences such as Chu sequences are employed. It is shown that a decision directed scheme based on an iterative block frequency domain equalizer can be used to compensate the pilot contamination impact on channel estimation without sacrificing the complexity. Moreover, when the coherence time spans multiple data blocks, these most accurate channel estimates can be used to precod the subsequent blocks and thereby improve system performance. It is also presented a set of performance results that sustain our assumption.

Biography

Mário Marques da Silva is an Associate Professor and the Director of the Department of Sciences and Technologies at Universidade Autónoma de Lisboa. He is also a Researcher at Instituto de Telecomunicações, in Lisbon, Portugal. He has been involved in multiple networking and telecommunications projects. His research interests include networking and mobile communications, namely 5G communications, interference cancellation, MIMO systems, channel estimation, software defined radio, IP technologies and network security. He is the author of five books entitled "Multimedia Communications and Networking", "Transmission Techniques for Emergent Multicast and Broadcast Systems", "Transmission Techniques for 4G Systems", "MIMO Processing for 4G and Beyond: Fundamentals and Evolution" and "Cable and Wireless Networks: Theory & Practice" (all from CRC Press). Moreover, he is author of several dozens of journal and conference papers, a Member of IEEE and AFCEA, and Reviewer for a number of international scientific IEEE journals and conferences. Finally, he has chaired many conference sessions and has been serving in the organizing committee of relevant EURASIP and IEEE conferences.

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