

A new modulation scheme: Polarized Modulation

Ana I. Perez-Neira

Centre Tecnològic de Telecomunicacions de Catalunya, Spain

Thursday, November 13th, 2014

4:00 pm - 5:00 pm

Room: BAR I 15

Abstract: This work presents the novel Polarized Modulation (PMod), which reveals itself as a very good trade off between OSTBC and VBLAST solutions. The goal is to increase throughput with low complexity both at transmission and reception and without need of Channel State Information at transmission. Indeed, it is not polarization multiplexing, where only one polarization is activated at a time. Demodulation (i.e. detection and decoding) alternatives, with different processing complexity and performance, are also studied. The results are validated using a framework developed for interactive mobile satellites, the newest version of ETSI TS 102 744 standard (BGAN), which aims to provide interactive mobile satellite communications. One of the major drawbacks in mobile satellite communications is the fact that the power budget is often restrictive, making unaffordable to improve the spectral efficiency without an increment of transmitted power. By using dual polarized antennas in the transmitter and receiver, the PMod technique achieves an improvement in throughput of up to 100%, with an increase of less than 1dB at low EbN0 regime.

Bio: Research field is in signal processing applied to wireless and satellite communications. She has been the leader of 18 projects and has participated in over 50 (7 for ESA). She is author of 50 journal papers (20 related with Satcom) and more than 200 conference papers (20 invited). She is co-author of 4 books and 5 patents (1 on satcom). Since 2008 she is member of EURASIP BoD (European Signal Processing Association) and since 2010 of IEEE SPTM (Signal Processing Theory and Methods), both by election. She has been guest editor in 5 special issues and currently she is editor of IEEE Transactions on Signal Processing and of Eurasip Signal Processing and Advances in Signal Processing. She has been the general chairman of IWCLD'09, EUSIPC'11, EW'14 and IWSCS'14. She has participated in the organization of ESA conference 1996 and SAM'04. Dra. Perez Neira publications have been cited over 1350 times, constituting an H-index of 17 and i10 of 42.

