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## Sparse adaptive filtering for wireless channel estimation and equalization

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Rayleigh's distribution is mainly used when fading wireless medium does not have proper line of sight (LOS) path and is dominated by a large number of non-line of sight (NLOS) paths due to reflections of the received signal. Also because of relative motion of the base station and mobile station, a random frequency shift is generally introduced in the carrier, which can be realized in terms of Doppler spread. In case of Rayleigh's fading channels, generally two critical problems arise in receiver design those are accurate estimations of channel coefficients followed by mitigation of channel impairments like inter symbol interference (ISI) and fading in presence of user mobility. The accuracy of estimated channel state information (CSI) is really crucial to design robust equalizer for reconstruction of bit sequence and the equalizer performance is affected by the fading rate and Doppler spread. The main research is oriented towards the exploitation of underlying sparseness of block adaptive filters through L0-norm penalty for accurate estimation with stable convergence which helps to design computationally efficient adaptive models that can be effectively used for practical applications. Block and fast block processing can be quite effective techniques for outdoor fading wireless environment with proper choice of modulation formats.

### Biography

Harish Kumar Sahoo is currently working as Associate Professor in the Department of Electronics and Telecommunication Engineering, Veer Surendra Sai University of Technology, Burla, Sambalpur, India. Prior to his present assignment, he had worked for six years in International Institute of Technology, Bhubaneswar, India. He has more than 15 years of teaching and research experiences. He has received his MTech degree from National Institute of Technology, Rourkela, India and PhD from Sambalpur University, India. He is a Senior Member of IEEE and Life Member of ISTE. He has published several journal and conference papers in Elsevier and IEEE. He is an Active Reviewer of IEEE Transaction on instrumentation and measurement, IEEE Transaction on power delivery, Elsevier, Springer as well as Taylor and Francis journal publishing companies. His research interest includes adaptive filtering and soft computing applications in wireless communication

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