

4 Conclusion

Here three different geometries are considered in smart antenna system, whose weights are updated with the help of adaptive algorithms to get the desired signal patterns in dynamic channel condition. The convergence speed of the LMS algorithm depends on the eigen values of the correlation matrix. With large eigen values spread it converges slowly in a dynamic channel environment. This problem is solved by RLS algorithm. Both the cases need the reference signal.

Most of the times reference is not available, in that situation constant modulus algorithm is used. And also noticed that as the number of elements increases, it converges rapidly. The convergence rates for LMS and NLMS are 0.0052 and 0.0041 seconds respectively when 100 iterations are taken for simulation. The simulations are carried on Intel(R) Core(TM) i5 CPU M460, @2.53 GHz, 6 GB of RAM hardware, using MATLAB (R2009b) software. The computation time can further be reduced, if higher end sophisticated signal processor is used for spatial processing in smart antenna system. These algorithms are used to adapt the weights of the array, realizing the desired parameters (i.e., main beam steering, deep null placement in the undesired signal direction, etc.) under noise environment.

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