

## **SPATIAL DOMAIN BEAMFORMING ALGORITHMS AND NEW BEAMFORMING CONCEPT FOR SMART ANTENNA SYSTEMS**

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### **Abstract**

Smart antennas are rapidly emerging as one of the promising key technologies that can enhance overall wireless communication system performance. It is an antenna array system aided by some “smart” algorithm designed to adapt to different environments. It mitigates fading through diversity reception and beamforming, while minimizing interference through spatial filtering. This paper presents classification of spatial domain beamformer algorithms and a new beamforming concept similar to sum and delay method. In this method maximization of signal energy in one direction is achieved by controlling interference pattern through changing the delay and spacing between array elements. The resultant beams produced through MATLAB simulation were more accurate with proposed new concept and gets sharper with increasing number of array elements. Results of numerical solution are useful for achieving beamforming in a smart antenna system with optimal performance.

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