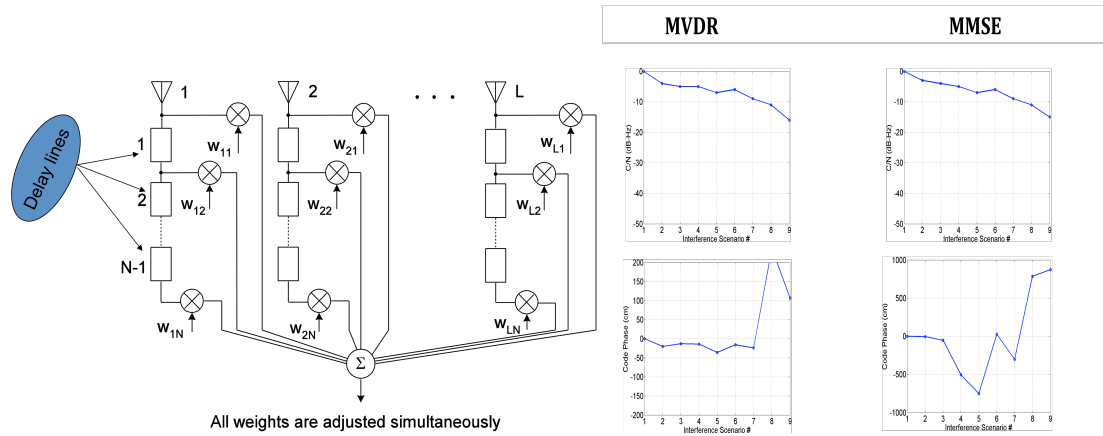


# Blind Beamforming in GNSS Receivers

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State-of-the-art GNSS receivers use space-time adaptive processing (STAP) based antennas in radio frequency challenged environments. For the best performance STAP is carried out using Minimum Variance with Distortionless Response (MVDR) algorithm. MVDR requires accurate knowledge of the *in-situ* antenna array response (magnitude and phase of individual elements of the antenna array) and that is not trivial. Thus, there is interest in blind beamforming algorithms. Minimum mean squared error (MMSE) algorithm is one way to carry out blind beamforming. However, conventional MMSE algorithm is not designed for GNSS receivers in that it can lead to carrier phase wipe out and can also lead to large biases in pseudo-range measurements. Also, for digital implementation of MMSE algorithm, one may not be able to obtain the correlation vector with enough accuracy in radio frequency challenged environments. Under this project, we are investigating new approaches to implement MMSE algorithm in GNSS receiver adaptive antennas.

## Further Reading:

- [1] Y. Chuang and I. J. Gupta, "Two Stage Beamformer for GNSS Receiver Antenna Arrays," *Proceedings of ION 2014 GNSS+ Meeting*, Tampa, FL, September 2014.
- [2] Y. Chuang and I. J. Gupta, "Blind Beamforming in STAP based GNSS Antenna Arrays," to be presented at 2105 International Technical Meeting of ION.