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## A NEW MULTI–ALGORITHM APPROACH TO SPARSE SYSTEM ADAPTATION  (TueAmOR12)

**✱ Author(s) :**

Ashrith Deshpande (University of Missouri –– Rolla, United States)
Steven L. Grant (University of Missouri –– Rolla, United States)

**✱ Abstract :**

This paper introduces a new combination of adaptive algorithms for the identification of sparse systems. Two similar adaptive filters, proportionate normalized least mean squares (PNLMS) and exponential gradient (EG) have been shown to have initial convergence that is much faster than the classical normalized least mean squares (NLMS) when the system to be identified is sparse. Unfortunately, after the initial phase, the convergence is then actually slower than NLMS. Another algorithm developed by Gansler, Benesty, Sondhi, and Gay, which we will refer to as GBSB, operates in a manner complementary to PNLMS and EG. Its initial convergence is at about the same rate as NLMS, but gradually accelerates to a very fast final convergence. By combining both algorithms, PNLMS and GBSG we obtain fast adaptation convergence rates in both initial and final phases of the process.

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