

LINEAR ALGEBRA AND ITS APPLICATIONS

CALL FOR PAPERS

Special Issue on *Sparse Approximate Solution of Linear Systems*

Compressive sensing and sparse approximation have seen an enormous research activity in recent years. The basic mathematical problem boils down to finding an (approximately) sparse solution of an underdetermined linear system. While the ℓ_0 -minimization approach to identifying such solutions turns out to be NP hard, it came as a surprise that efficient alternatives such as convex relaxation (ℓ_1 -minimization) and greedy algorithm are provably effective in identifying the sparsest solution under suitable assumptions on the matrix describing the linear system. In particular, it is possible to recover a suitably sparse vector from incomplete linear information. Remarkably, it is still an open problem to come up with optimal deterministic matrix construction in this context, and indeed, a breakthrough was achieved by considering random matrices. Recently, extensions to the recovery of low rank matrices from incomplete linear information were developed. Applications can be found in various areas including signal and image processing, and numerical analysis.

This special issue is devoted to the mathematical aspects of sparsity in underdetermined linear systems. Its goals are to highlight recent advances and developments, outstanding open problems, on the many facets, techniques, and results of this field. It will be open to all papers with significant new results in the described area. Survey papers and research problems articles are highly encouraged as well.

Areas and topics of interest for this special issue include, but are not limited to:

- Compressive sensing
- Sparse representations, sparse approximation
- Sparse and low rank models (e.g. block sparsity, joint sparsity etc.)
- Recovery and approximation algorithms, including ℓ_1 -minimization and greedy algorithms
- Random matrices in connection with sparsity
- Structured random matrices
- Low rank recovery - algorithms and analysis
- Applications of sparse recovery / sparse approximation / low rank recovery
- Sublinear algorithms for sparse and low rank recovery

The **deadline for submission** of papers is **July 31, 2012**, and the special issue is expected to be published in 2013. Papers should either be submitted to the responsible editor-in-chief V. Mehrmann, choosing the special issue "Sparse Approximate Solution of Linear Systems", through the electronic submission system of LAA at <http://ees.elsevier.com/laa>. They must meet the publication standards of LAA and will be refereed in the usual way.

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