5005-C1-7 **Sadegh Jokar*** (jokar@math.tu-berlin.de), Insitute for Mathematics, TU Berlin, Strae des 17. Juni 136, 10623 Berlin, Germany, and **Marc E. Pfetsch** (pfetsch@zib.de), Zuse Institute Berlin, Takustr. 7, 14195 Berlin, Germany. *Exact and Approximate Sparse Solutions of Underdetermined Linear Equations.*

In this paper, we empirically investigate the NP-hard problem of finding sparse solutions to linear equation systems, i.e., solutions with as few nonzeros as possible. This problem has received considerable interest in the sparse approximation and signal processing literature, recently. We use a branch-and-cut approach via the maximum feasible subsystem problem to compute optimal solutions for small instances and investigate the uniqueness of the optimal solutions. We furthermore discuss five (modifications of) heuristics for this problem that appear in different parts of the literature. For small instances, the exact optimal solutions allow us to evaluate the quality of the heuristics, while for larger instances we compare their relative performance. One outcome is that the basis pursuit heuristic performs worse, compared to the other methods. Among the best heuristics are a method due to Mangasarian and a bilinear approach. (Received February 27, 2007)