

## THE CONDITIONING ANALYSIS OF UNPERTURBED MILU FACTORIZATIONS

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Unperturbed MILU factorizations lie at the root of some of the most performant preconditioners used today. Their conditioning analysis was an active research area in the late eighties, whose very results shifted attention to graph ordering techniques. These results stressed in particular the interest of orderings leading to directed graphs with small depths such as produced by multilevel recursive orderings. The same issue was concurrently supported by the developments of the more popular finite element hierarchical basis methods. The so-called stabilization of algebraic multilevel methods then became the central topic, much less attention being paid to the conditioning analysis of the underlying MILU factorizations which did not anymore play the main role.

Recent publications showed however renewed interest for the analysis techniques used in that field and which rely on graph connectivity properties. In this talk, we attempt to give an overview of the results that were achieved, the questions left open and the general ideas spanning the analysis techniques that had been developed.