

## **A new matrix factorization of symmetric indefinite matrices**

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Indefinite symmetric matrices occur in many applications, such as optimization, partial differential equations and variational problems where they are linked to a so-called saddle point problem. In these applications one is often interested in computing an estimate of the dominant eigenspace of such matrices, in order to solve regularized least squares problems or compute preconditioners. In this talk we propose an incremental method to compute the  $UTU'$  factorization of a symmetric indefinite matrix, where  $U$  is an orthogonal matrix and  $T$  is a symmetric block anti-triangular one. Moreover, we discuss its use for computing an estimate of the dominant eigenspace of such matrices..

This is joint work with Nicola Mastronardi (CNR, Bari).