

A Time-Reducible Approach to Compute Determinant $|I-X|$

Authors : Wang Xingbo

Abstract : Computation of determinant in the form $|I-X|$ is primary and fundamental because it can help to compute many other determinants. This article puts forward a time-reducible approach to compute determinant $|I-X|$. The approach is derived from the Newton's identity and its time complexity is no more than that to compute the eigenvalues of the square matrix X . Mathematical deductions and numerical example are presented in detail for the approach. By comparison with classical approaches the new approach is proved to be superior to the classical ones and it can naturally reduce the computational time with the improvement of efficiency to compute eigenvalues of the square matrix.

Keywords : algorithm, determinant, computation, eigenvalue, time complexity

Conference Title : ICCS 2016 : International Conference on Computational Science

Conference Location : Stockholm, Sweden

Conference Dates : July 11-12, 2016