

SESSION D.5
SIGNAL PROCESSING

DETECTION AND DIAGNOSIS OF CHANGES IN THE VIBRATING CHARACTERISTICS OF A STRUCTURE SUBJECT TO NON-STATIONARY UNKNOWN EXCITATION

M. BASSEVILLE, A. BENVENISTE, G. MOUSTAKIDES, A. ROUGEE, Campus Universitaire de Beaulieu, Avenue du Général Leclerc, 35042 Rennes Cedex, France

Two problems are addressed in this paper, namely detection and diagnosis of changes in the poles of a signal having unknown time varying zeroes. The test statistics we suggest for the first problem of detection without diagnosis, is not based upon the standard likelihood ratio approach, which is of no help in the present case, but rather on an identification method. This test statistics can be extended to the second problem, namely the detection with diagnosis of which poles have changed.

Only the scalar case is investigated here. But the proposed test statistics can be extended to the vector case, and may be used as a solution to the problem of vibration monitoring. This will be reported later.