



**Control Performance in Underwater Acoustic
Sensor Networks**

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Connectivity of an asymmetric network represented by a weighted digraph is investigated in this work. A novel distributed algorithm based on the subspace consensus approach is introduced to compute the generalized algebraic connectivity as connectivity measure of asymmetric networks from the viewpoint of each node. After properly transforming the Laplacian matrix of the network, two sequences of one-dimensional and two-dimensional subspaces are generated iteratively by each node in a distributed manner such that one of them converges to the desired subspace spanned by the eigenvector(s) associated with the eigenvalue(s) representing the network's generalized algebraic connectivity. The convergence analysis of the distributed algorithm is subsequently provided under some assumptions. The efficiency of the developed algorithm in computing the network connectivity is demonstrated by simulations and experiments.