IRENE SCIRIHA, University of Malta
Interlacing and Omni-Conduction in Single Molecules

Conduction in single molecules is explored by considering singular subgraphs of the molecular graph. The Interlacing Theorem determines fluctuations in the spectrum of a graph when a vertex is deleted, illuminating the concept of electric transmission. A molecular device where conduction occurs independently of placement of terminals is an omni-conductor. Sufficient conditions for conduction are presented, enabling the classification of conducting and insulating molecular graphs.