## RANKING NODES ON NETWORKS

## J. Baglama, **C. Fenu**, D. Martin, L. Reichel and G. Rodriguez Department of Mathematics and Computer Science, University of Cagliari Viale Merello 92, Cagliari, Italy kate.fenu@gmail.com

After an introduction on complex networks, we will describe one of the main issues in this field, that is, find the "most important" nodes. To this aim, one can use matrix functions applied to its adjacency matrix and the connection between quadrature formulas and Lancozs algorithm. We will introduce a new computational method to rank the nodes of an unweighted network according to the values of these functions. The algorithm uses a partial singular value decomposition, in order to obtain a low-rank approximation of the adjacency matrix, and then Gauss quadrature is used to refine the computation. The method is compared to other approaches on networks coming from real applications.