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**Systematic Analysis of Group Identification in Stock Markets**

DONG-HEE KIM, HAWOONG JEONG, Department of Physics, KAIST — We propose improved methods to identify stock groups using the correlation matrix of stock price changes. By filtering out the marketwide effect and the random noise, we construct the correlation matrix of stock groups in which nontrivial high correlations between stocks are found. Using the filtered correlation matrix, we successfully identify the multiple stock groups without any extra knowledge of the stocks by the optimization of the matrix representation and the percolation approach to the correlation-based network of stocks. These methods drastically reduce the ambiguities while finding stock groups using the eigenvectors of the correlation matrix.

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