Normalized Adjacency and Laplacian Matrixes (II)

- $A_N = D^{-\frac{1}{2}} A D^{-\frac{1}{2}}$
- Normalized Laplacian Matrix :

  $L_N = I - A_N$

  $L_N = I - A_N == D^{-\frac{1}{2}}(D - A)D^{-\frac{1}{2}} = D^{-\frac{1}{2}} L D^{-\frac{1}{2}}$
- Claim : let $\alpha_1 \geq \cdots \geq \alpha_n$ be the eigenvalues of A_N and $\lambda_1 \leq \lambda_2 \ldots \leq \lambda_n$ are eigenvalues $of\ L_N$

$$1 = \alpha_1 \geq \cdots \geq \alpha_n \geq -1$$
$$0 \leq \lambda_1 \leq \lambda_2 \ldots \leq \lambda_n \leq 2$$