

(Bunimocich, Smith, Webb 2018)

Let $G = (V, E, \omega)$ and let $C_1, C_2 \dots C_m$ be the strongly connected components in the graph G with B removed. Then,

$$\sigma(S_B(G)) = \sigma(G) \cup \sigma(S_1)^{n_1-1} \cup \sigma(S_2)^{n_2-1} \cup \dots \cup \sigma(S_k)^{n_k-1}$$

where each n_i is the number of branches that contain S_i .

(Bunimocich, Passey, Smith, Webb 2018)

1. The centrality of nodes in the base set is preserved
2. If Z_1 and Z_2 are copies of Z in $S_B(G)$ then the centrality of corresponding nodes in Z_1 and Z_2 are the same if Z_1 and Z_2 have the same incoming branch.
3. If the set $\{Z_1, Z_2, \dots Z_k\}$ is the set of all copies of Z in $Sp(G)$ that have the same outgoing branch, then their centralities sum to the centrality of Z in the original graph.