

Rich-club ordering and the dyadic effect: Two interrelated phenomena

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Rich-club ordering and the dyadic effect are two phenomena observed in complex networks that are based on the presence of certain patterns in the linkage of specific nodes. Rich-club ordering [2] represents the tendency of highly connected and important elements to form tight communities with other central elements. The dyadic effect [1] denotes the tendency of nodes that share a common property to be much more interconnected than expected.

We consider the interrelation between these two phenomena, which until now have always been studied separately, providing a new formulation of the rich-club measures in terms of the dyadic effect. The reformulation allows us to improve the rich-club coefficient and to introduce certain measures, related to the analysis of the dyadic effect, which are useful in that they confirm the presence and relevance of rich-clubs in complex networks.

Moreover, the introduced measures provide a baseline for the evaluation of the rich-club size, that is a open issue in the study of complex networks, in a computationally efficient way.

References

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