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The way to uncover community structure with core and diversity

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We propose a simple and efficient community detection method to deepen our understanding of the emergence and diversity of communities in complex systems.

We introduce the rational random selection, and reveal the hidden deterministic and normal diverse community states of community structure by giving out the core-community, the real-community, the tide and the diversity.

The community structures in different states correspond to various pints of view for viewing the community structure of real-life complex systems with core and diversity.

Statistics of the core-community and real-community reveal the hidden inherent properties of complex systems.

The results give an indication that the rational randomness based on self-expectation plays an important role in the emergence of diversity and stability of communities.

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