

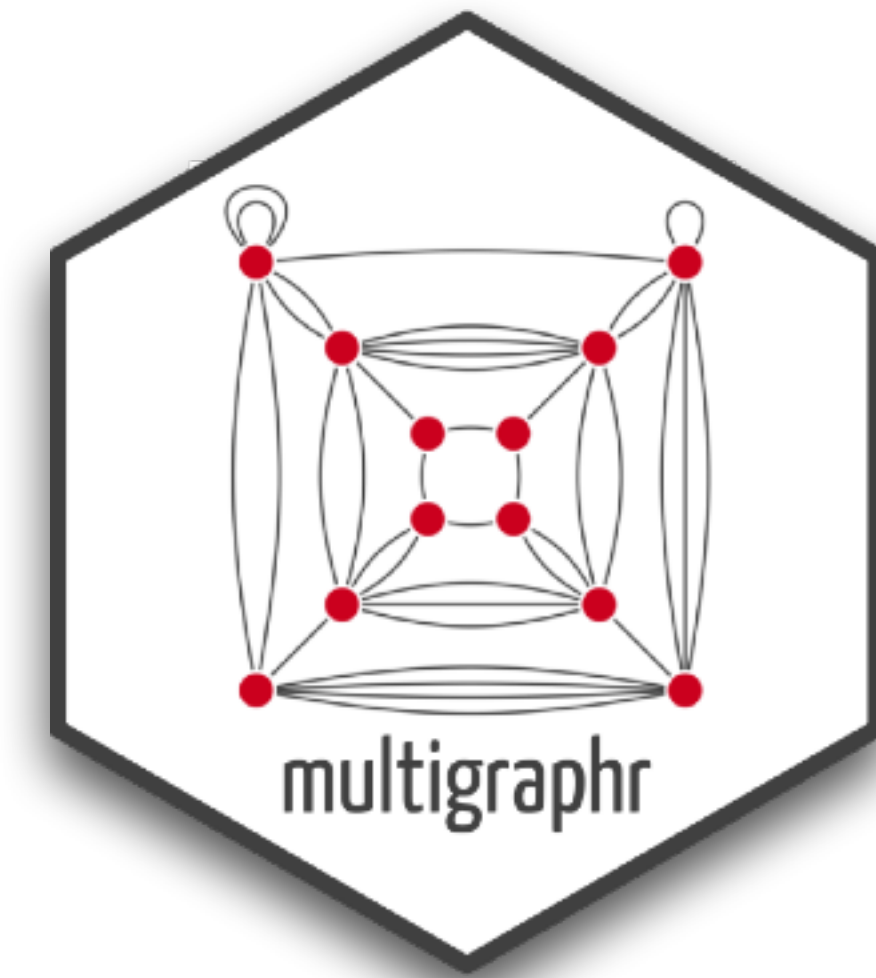
multigraph representation of network data

multivariate network data represented as multigraphs:
“graphs where multiple edges and self-edges are permitted”

methodological developments and software:

- ☑ two random multigraph models
- ☑ definition of several statistics to analyse structural features
- ☑ formal goodness of fit tests
- ☑ R package:

<https://cran.r-project.org/package=multigraphr>



limitation: currently only implemented for exact distributions of multigraphs

possible solutions:

- ☑ MC methods for approximating probability distributions
- ☑ focus on small networks such as ego nets

running example

Krackhardt's High-tech Managers Networks (1987)

cognitive social structure data from 21 management personnel in a high-tech firm

relations:	actor attributes:
<ul style="list-style-type: none">- undirected friendship- directed advice	<ul style="list-style-type: none">- department- level- age- tenure

(also includes the relations each ego perceived among all other managers)

- ☑ age and tenure binarized to indicate low/high (0/1)
- ☑ each node thus has 4 possible cross-classified attribute outcomes: (0,0), (0,1), (1,0), (1,1)
- ☑ multigraphs aggregated based on these four possible outcomes represented as nodes