ARXIV NETSCIENCE MULTIPLEX

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Reference and Acknowledgments

This README file accompanies the dataset representing the multiplex coauthorship network of the free scientific repository "arXiv". If you use this dataset in your work either for analysis or for visualization, you should acknowledge/cite the following paper:

"Identifying Modular Flows on Multilayer Networks Reveals Highly Overlapping Organization in Interconnected Systems"

Manlio De Domenico, Andrea Lancichinetti, Alex Arenas, and Martin Rosvall

Physical Review X 5, 011027 (2015)

that can be found at the following URLs:

http://journals.aps.org/prx/abstract/10.1103/PhysRevX.5.011027

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Visit

PLEXMATH: http://www.plexmath.eu/

ALEPHSYS: http://deim.urv.cat/~alephsys/

for further details.

Description of the dataset

The multiplex consists of layers corresponding to different arXiv categories. To restrict the analysis to a well-defined topic of research, we only included papers with "networks" in the title or abstract up to May 2014.

The multiplex network used in the paper makes use of 13 layers corresponding to:

- 1. physics.soc-ph
- 2. physics.data-an
- 3. physics.bio-ph
- 4. math-ph
- 5. math.OC
- 6. cond-mat.dis-nn
- 7. cond-mat.stat-mech
- 8. q-bio.MN

- 9. q-bio
- 10. q-bio.BM
- 11. nlin.AO
- 12. cs.SI
- 13. cs.CV

There are 14,489 nodes, labelled with integer ID between 0 and 14,488, and 59,026 coauthorship connections. The multiplex is undirected (with only one direction specified) and weighted, stored as edges list in the file

 $arxiv_nets cience_multiplex.edges$

with format

layerID nodeID nodeID weight

The IDs of all layers are stored in

arxiv_netscience_layers.txt

The IDs of nodes are not provided.

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Contacts

If you find any error in the dataset or you have questions, please contact

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