

Accepted Manuscript

Optimization algorithms for spectral coarse-graining of complex networks

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PII: S0378-4371(18)31283-4
DOI: <https://doi.org/10.1016/j.physa.2018.09.132>
Reference: PHYSA 20193

To appear in: *Physica A*

Received date: 30 April 2018
Revised date: 2 August 2018

Please cite this article as: Z. Jia, et al., Optimization algorithms for spectral coarse-graining of complex networks, *Physica A* (2018), <https://doi.org/10.1016/j.physa.2018.09.132>

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*Highlights (for review)

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1. A new viewpoint of coarse graining optimization is put forward.
2. Two optimization algorithms which are called variable step size optimization algorithm (VSSOA) and variable scale optimization algorithm (VSOA) are proposed.
3. The optimal coarse-graining step size and optimal scale for several typical networks are calculated, and the corresponding optimal coarse-grained networks are derived.

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