

University of Groningen

Distributed coordination and partial synchronization in complex networks

Qin, Yuzhen

DOI:
[10.33612/diss.108085222](https://doi.org/10.33612/diss.108085222)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2019

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):
Qin, Y. (2019). *Distributed coordination and partial synchronization in complex networks*. University of Groningen. <https://doi.org/10.33612/diss.108085222>

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

PROPOSITIONS

belonging to the thesis

Distributed Coordination and Partial Synchronization in Complex Networks

by

Yuzhen Qin

1. A constructed Lyapunov function does not need to decrease in expectation at every step. Stability can be ensured if it always decreases after some finite steps. – Chapter 3
2. Asynchronous updating events can lead to agreement among agents in networks where oscillation always take place. – Chapter 4
3. Averaging can iron out the fast oscillations, making it possible to analyze the qualitative behavior of a system containing time-scales separation. It also works in studying partial exponential stability of two-timescale systems. – Chapter 6
4. Synchronization across the entire brain is always a sign of certain brain diseases. Partial synchronization takes place in the healthy brain. – Chapter 5 & 7
5. Local strong connections can account for partial synchronization among directly connected regions. Network symmetries are essential to the emergence of remote synchronization. – Chapter 5 & 7
6. Parameter inhomogeneity of the relaying node can actually enhance remote synchronization. – Chapter 7
7. *Events may appear to us to be random, but this could be attributed to human ignorance about the details of the processes involved.* (Everitt & Rules, 1999)
Stochastic Lyapunov theory can provide us a bit more details into the random processes we are dealing with.
8. *The more I learn, the more I realize how much I don't know.* (Albert Einstein)
I have learned a lot, but I have much more to learn.