MATH-681 **Reading group in applied topology II**

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Cursus	Sem.	Type
Mathematics		Opt.

Language of teaching	English
Credits	1
Session	
Exam	Oral presentation
Workload	30h
Hours	**14**
Lecture	14
Number of positions	

Frequency

Every year

Remark

Spring semester

Summary

In this reading group, we will work together through recent important papers in applied topology. Participants will take turns presenting articles, then leading a discussion of the contents.

Content

The field of applied topology is growing extremely rapidly, in terms of both the development of new theory and the elaboration of significant new applications. The goal of this reading group is to provide a framework in which to survey the literature efficiently, to ensure that all participants are aware of the most significant recent developments.

PhD students participating in the course for credit must give two presentations of all or part of an article selected by the course coordinator.

In the spring semester of 2021, we will focus in particular on various papers concerning Laplacians on simplicial complexes and their relation to Hodge decompositions, harmonic representatives, spectral clustering, diffusion processes, and random walks.

Keywords

Applied topology, network, machine learning

Resources

Bibliography

[1] "Some new results on the combinatorial Laplacian"# , see attachment
[2] "Control using Higher Order Laplacians in Network Topologies", see attachment
[3] http://www.math.ucsd.edu/~fan/research/revised.html
[4] https://arxiv.org/pdf/0711.0189.pdf

Références suggérées par la bibliothèque

- Some new results on the combinatorial Laplacian / Gustavson
- Control using Higher Order Laplacians in Network Topologies / Muhammad