Challenges

- Network geometry is a promising framework, but its applicability relies heavily on our capacity to find high- bquality embeddings of the original datasets, which is hard.
- We cannot power our way through this challenge using GPUs or supercomputers: we need to design smarter algorithms.

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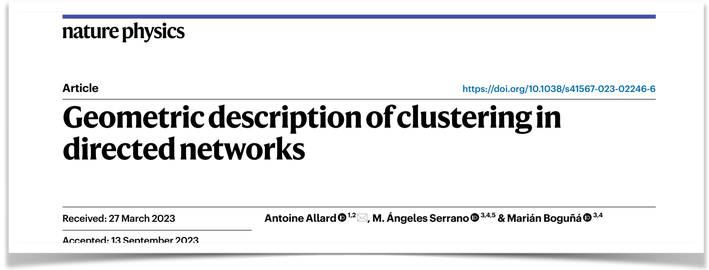

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Geometric description of clustering in directed networks

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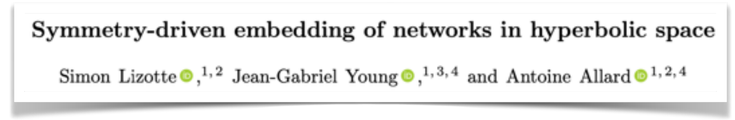


Symmetry-driven embedding of networks in hyperbolic space

Simon Lizotte[1,2] Jean-Gabriel Young[1,3,4] and Antoine Allard[1,2,4]

arXiv:2406.10711

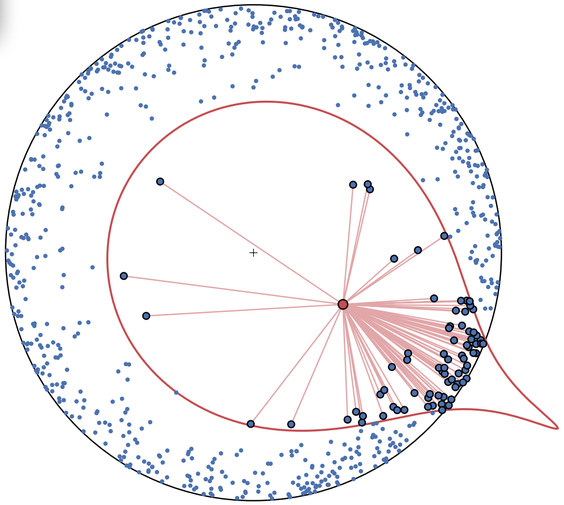
Hyperbolic Embedding of Directed Networks

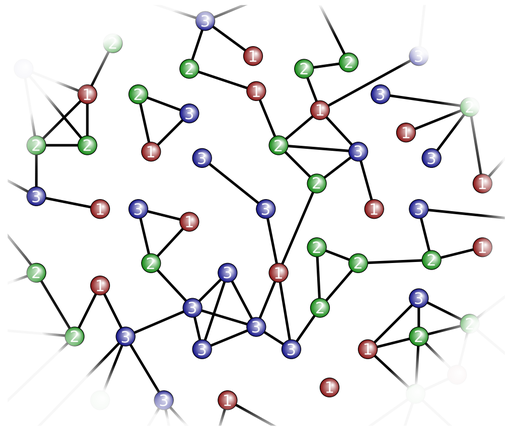
Jérémi Lesage, M. Ángeles Serrano, Marián Boguñá and Antoine Allard

Preprint on arXiv expected early 2025

Theoretical justifications exist for the use of "simple" models of complex networks and of the dynamics they support.

Simple models can reproduce nontrivial complex connections patterns observed in real networks, but there are still several challenges ahead to bridge the gap between our models and real networks.





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