Minimum Spawning Tree

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DPHPC

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Problem definition
Algorithms
Environment
Benchmarking

Concepts
Use cases

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The MST problem

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(Somewhat) realistic use-cases and input sets?

- $G(n, p)$
- Preferential attachment
  - Social networks

Algorithms

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Prim
Kruskal
Borůvka (Sollin)
Others

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A few ideas

Correctness

How to verify correctness of the parallelization?

Environment

Architecture

EULER Cluster

Xeon Ex, $x \in \{3, 5, 7\}$; x86_64 architecture

Tools

- C++ (gcc, mpicc wrapper)
- OMP (shared memory)

Benchmarking

Tools

- **Measures** : LibSciBench library
- **Interpretation** : LibSciBench's R scripts

Ref : https://spcl.inf.ethz.ch/Research/Performance/LibLSB/

Baseline

Borůvka's serial algorithm
$O(E \cdot log(V))$

https://en.wikipedia.org/wiki/Otakar_Bor%C5%AFvka