COMPACT ROUTING FOR LOW EARTH ORBIT SATELLITES

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INTRODUCTION
Simulator Choice (-> if implementation section)

SaVi

PyEphem
STARLINK CONSTELLATION

50 PLANES
32 SATS/PLANE
PHYSICAL LIMITATION: EARTH’S CURVE

8’000 KM
PHYSICAL LIMITATION: GROUND STATIONS?
NETWORK LIMITATION:
5 LINKS
Routing table size (dijkstra vs compact)

Routing table per node: 15X smaller
Routing table size (dijkstra vs compact)

TOTAL ROUTING TABLE SIZE
Algorithms depending on the line of sight

Routing distance for 1000 pairs
Limitations

- Simulations on the entire network hard to determine
  - Links configuration for constellation with multiple altitudes required -> FUTURE WORK, MULT. STAGES
- Relies on the assumption the closest node will be the best (from Harvey’s paper) -> FUTURE WORK
- Light speed in vacuum: 40% higher than in air:
  - Obvious lack of performances if difference Compact/Dijkstra is high
- Ground stations -> FUTURE WORK