



# QKD in the GÉANT network

Performance of multiplexed QKD

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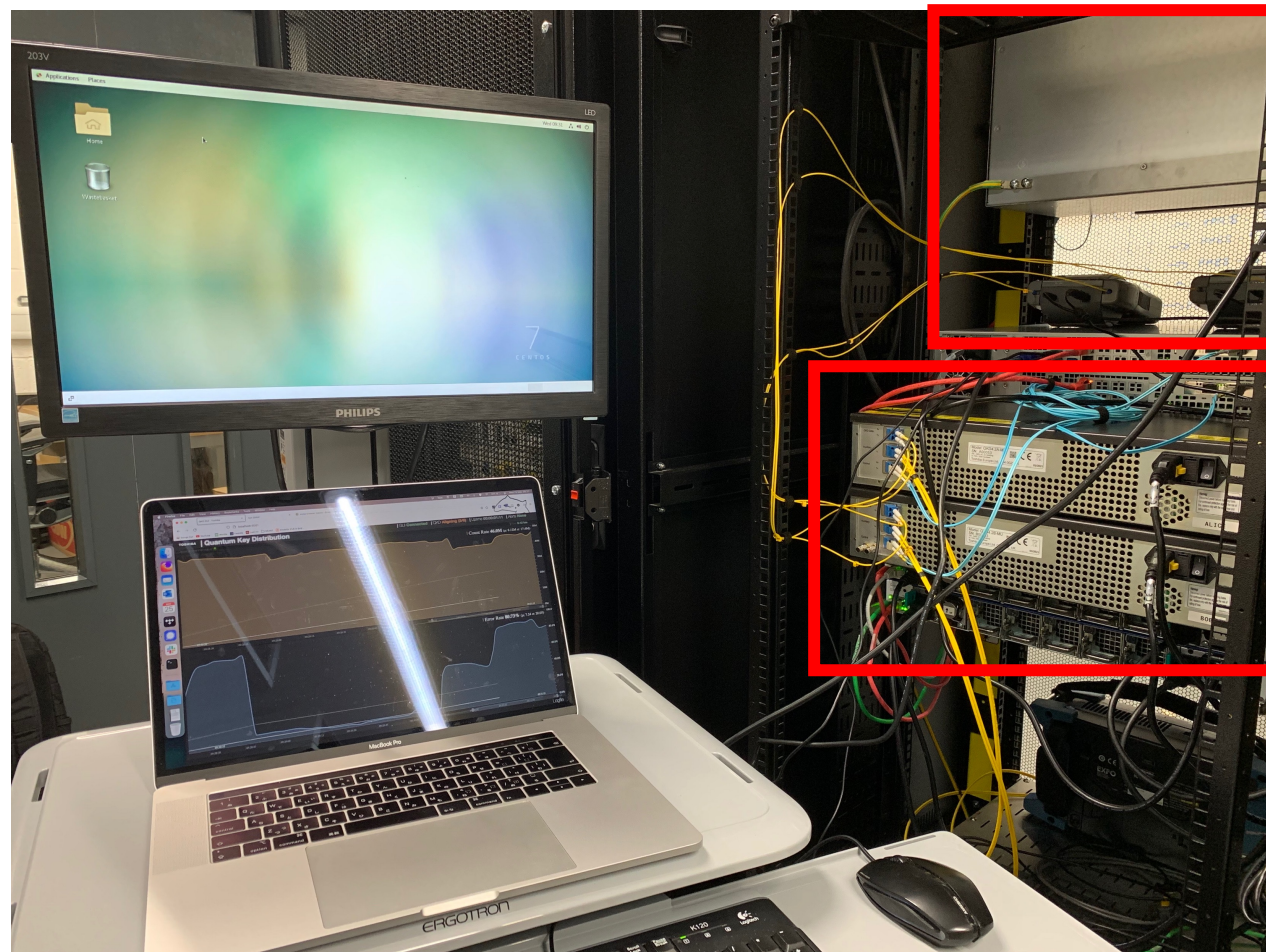
Celebrating the World Quantum Day

14<sup>th</sup> April 2023

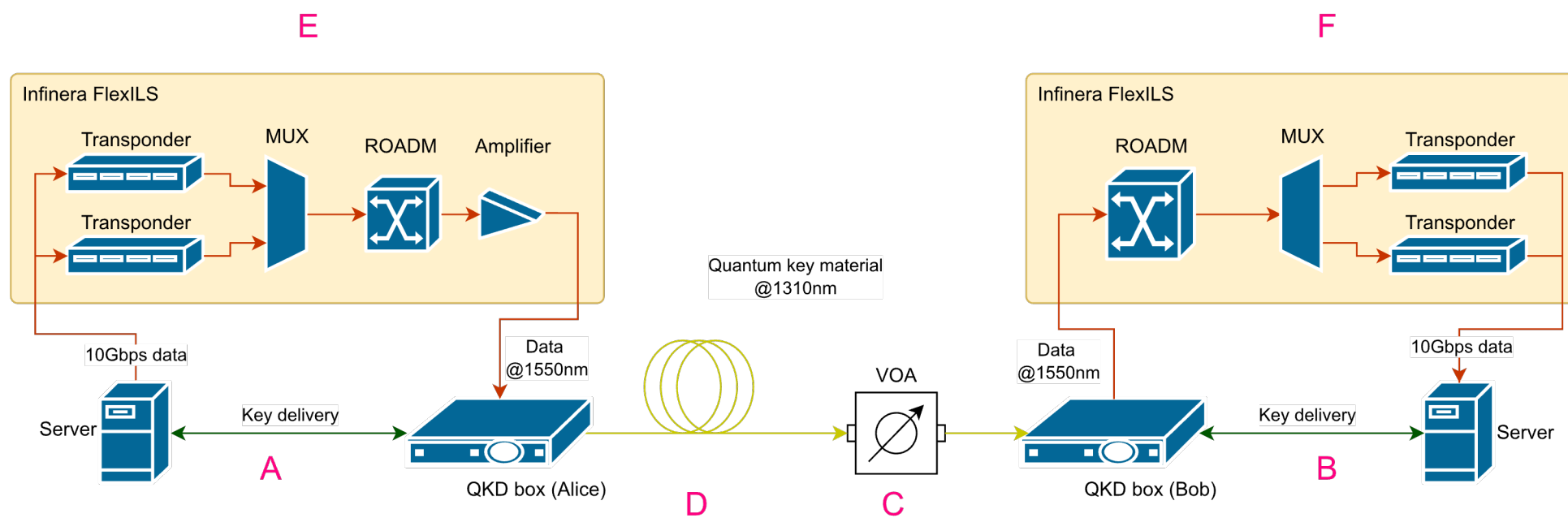
Public

## Experiments

- QKD in C-band, no data
- QKD in O-band, data in C-band
- Multiplex data at multiple power levels
  - Secret Key Rate
  - QBER
- Maximum sustainable attenuation
  - Which link spans could we cover currently?

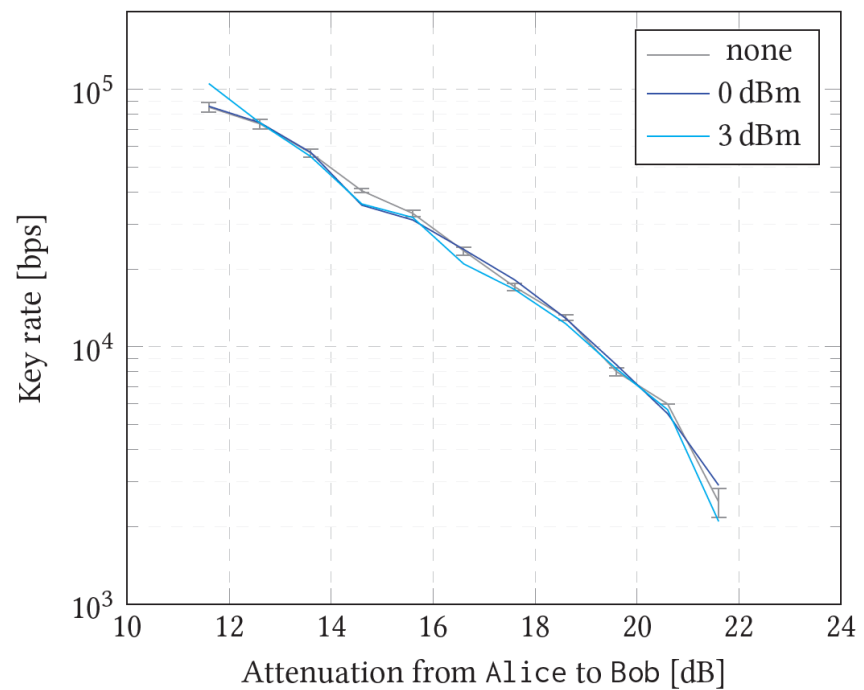


# Lab Setup

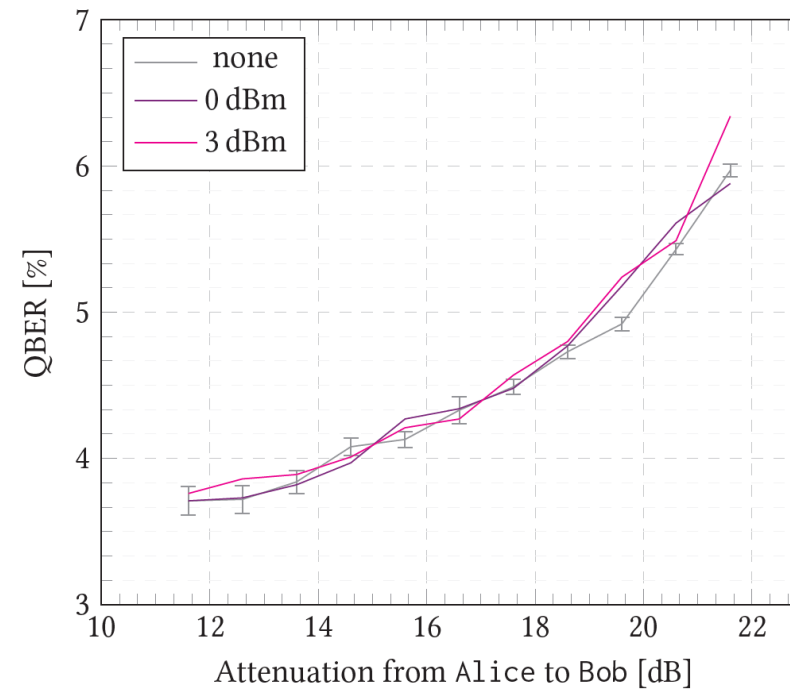


## Results (Single Data Wave)

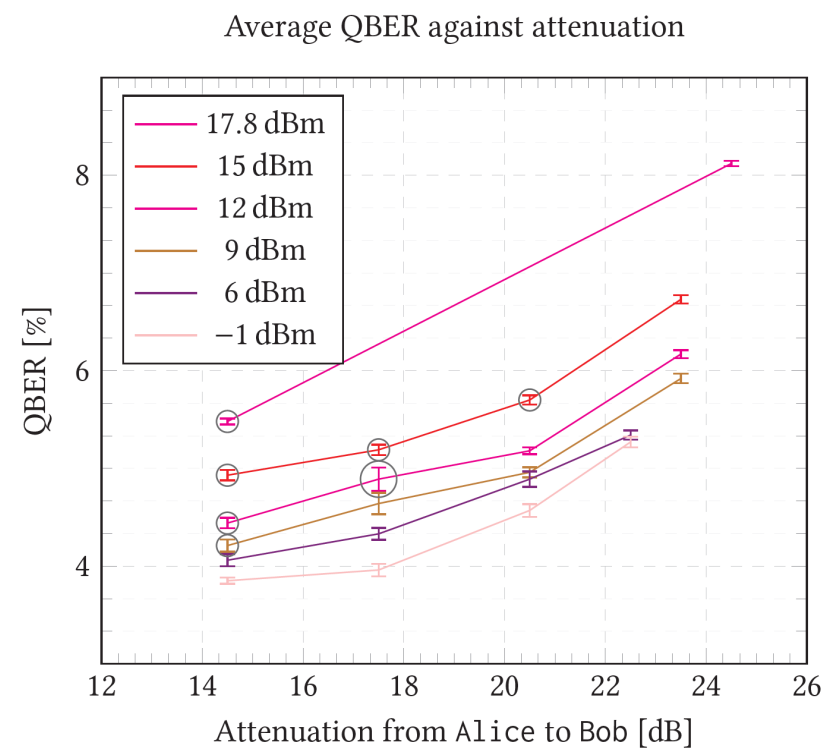
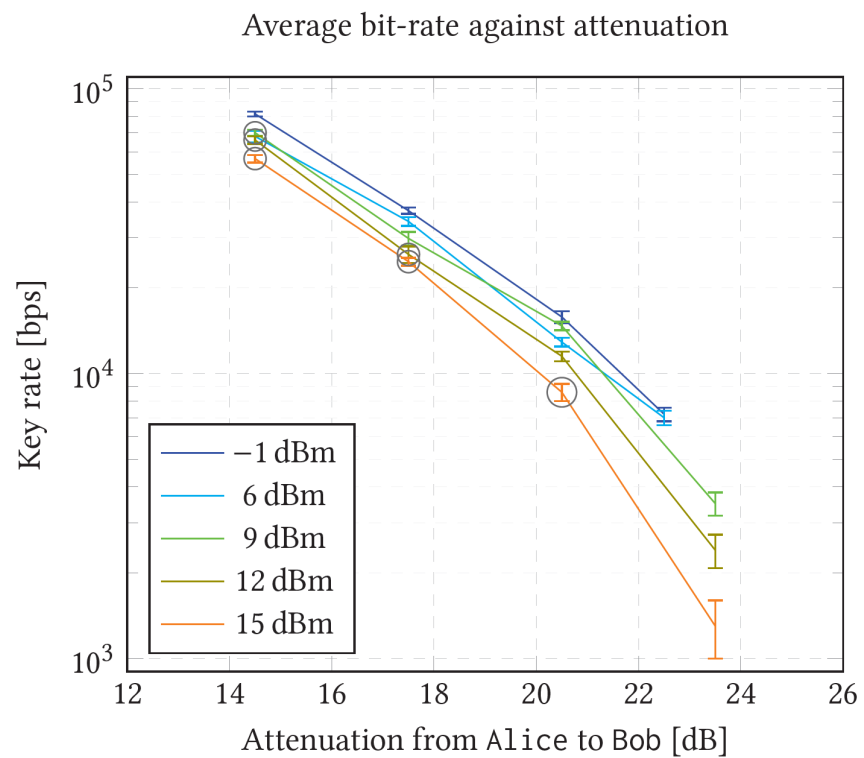
Average bit-rate against attenuation



Average QBER against attenuation

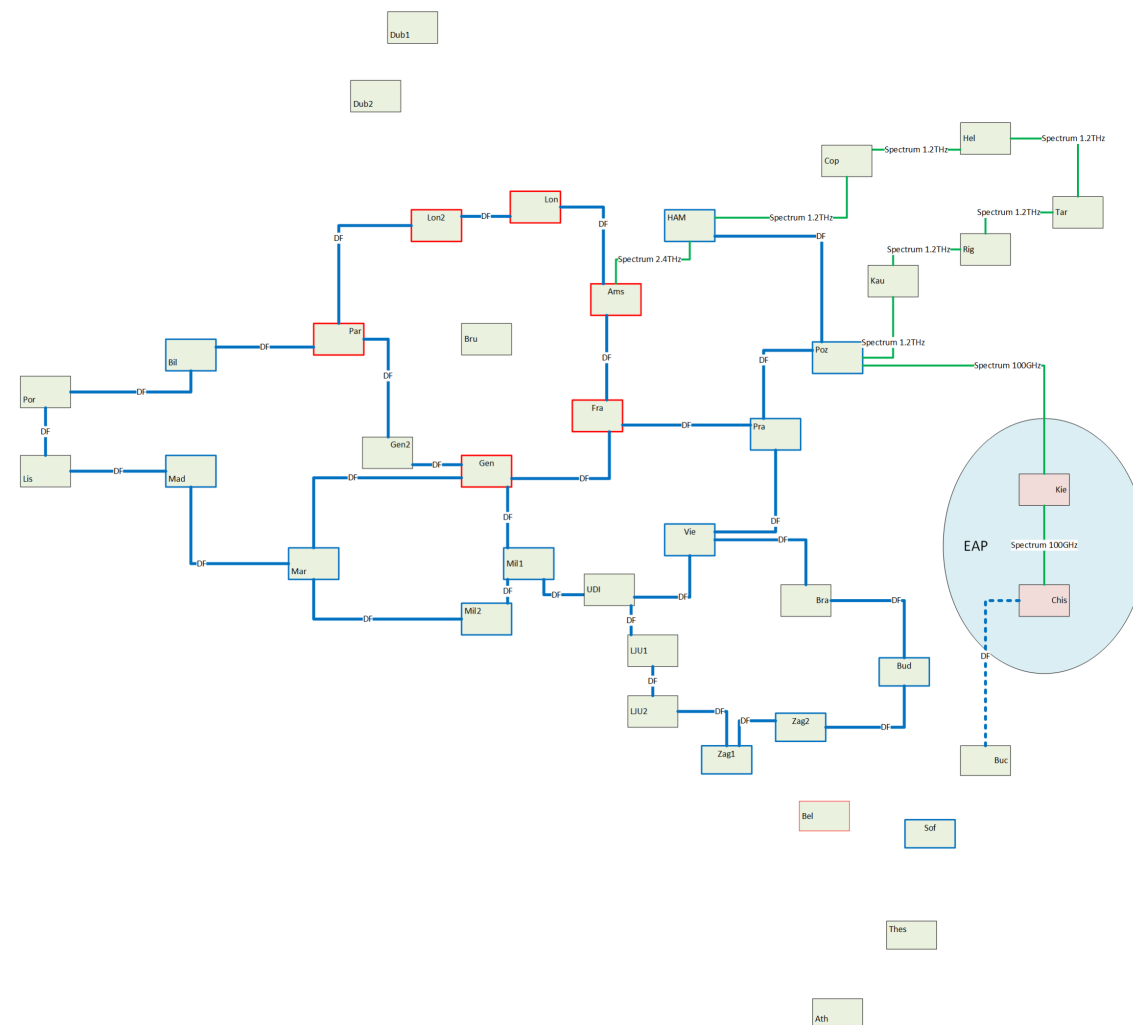


## Results (Two Data Waves)



## Feasibility of Implementation

- Multiplex QKD traffic at 1310nm with data at 1550nm
- Use dedicated dark fibre with QKD at 1550nm
- ... or something else





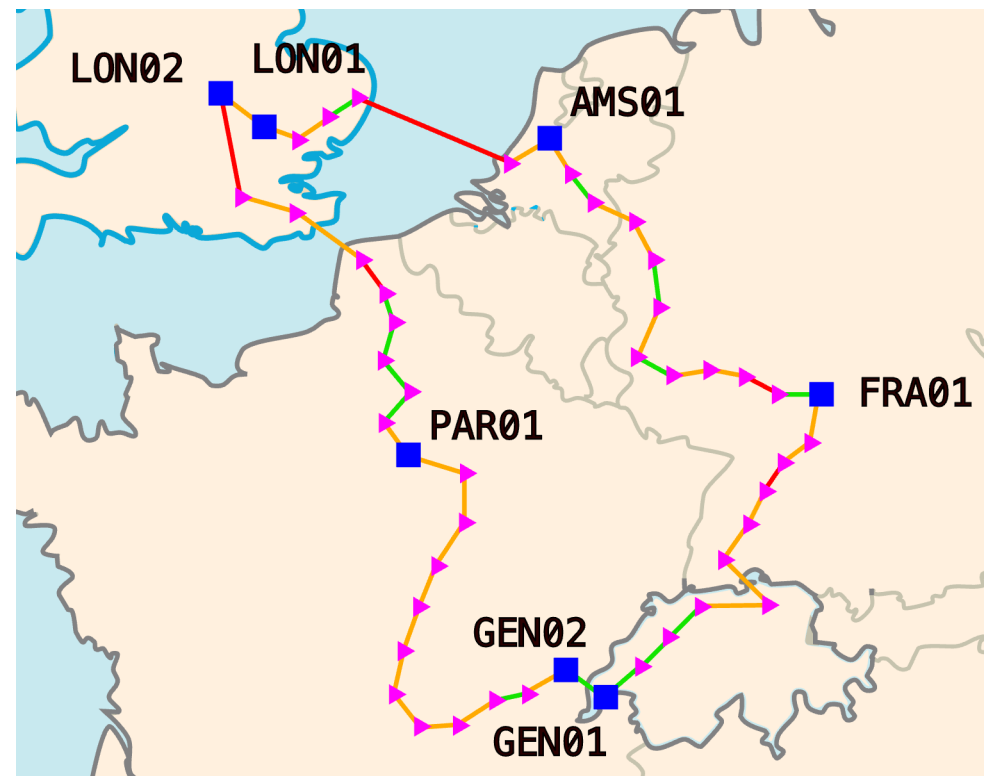
## Feasibility of Implementation

- Western ring:
  - ~23% @1310nm
  - ~90% @1550nm

Green: multiplexing possible

Orange: dark fibre possible

Red: alternative needed







# Thank You

Any questions?

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