

**McKay Brothers  
Microwave**



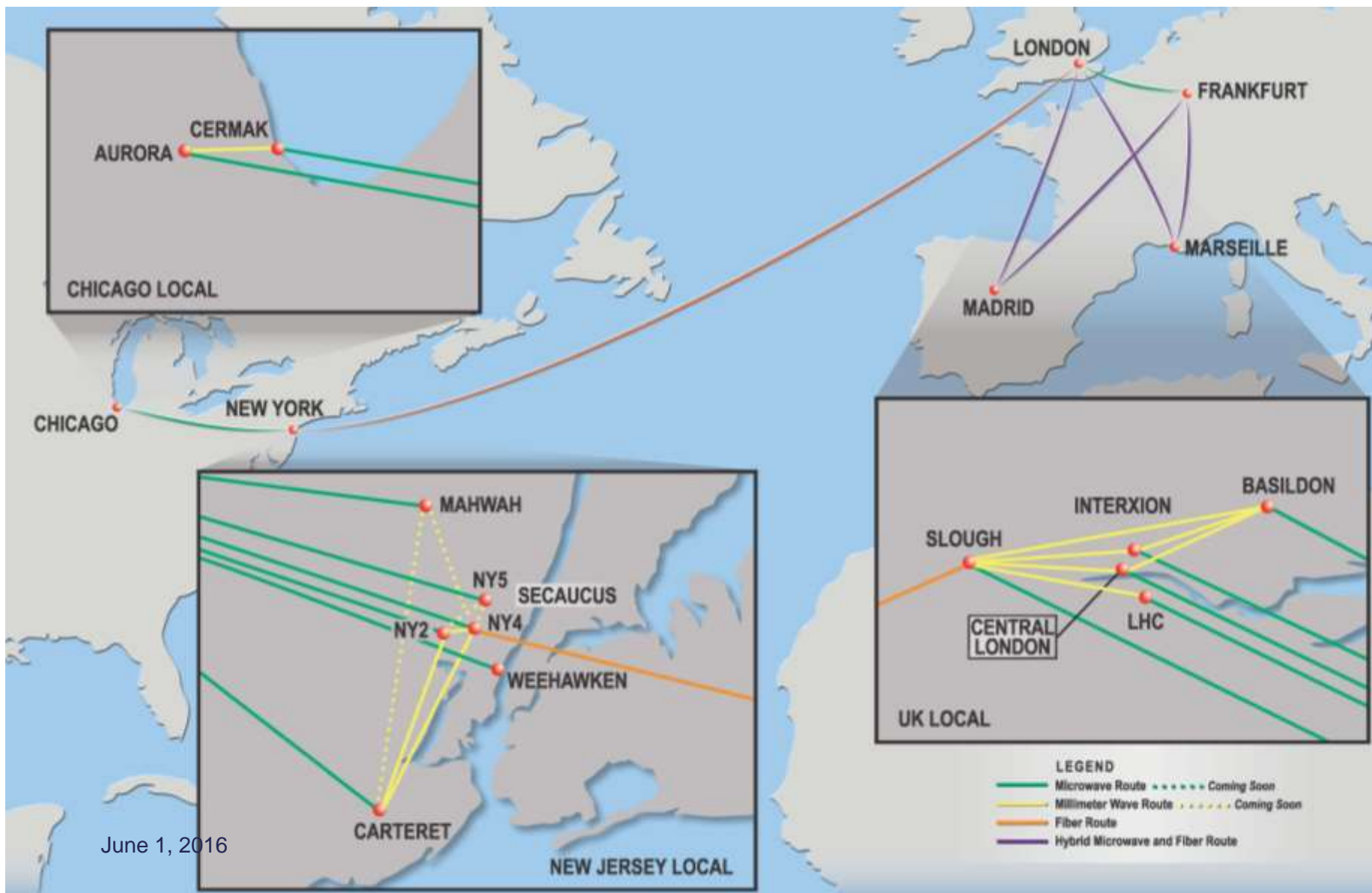
**Quincy Extreme  
Data**

**Exchanges vs networks: The intensifying competition  
between determinism and speed**

**Are We Moving To A Winner  
Takes All Situation?**

**Stéphane Tyč**

# Quincy Data Microwave Market Data



# CME to NY4 since inception

3

- Average latency and PLR by month - July 2012 to April 2016

Average latency during PSH (ms)



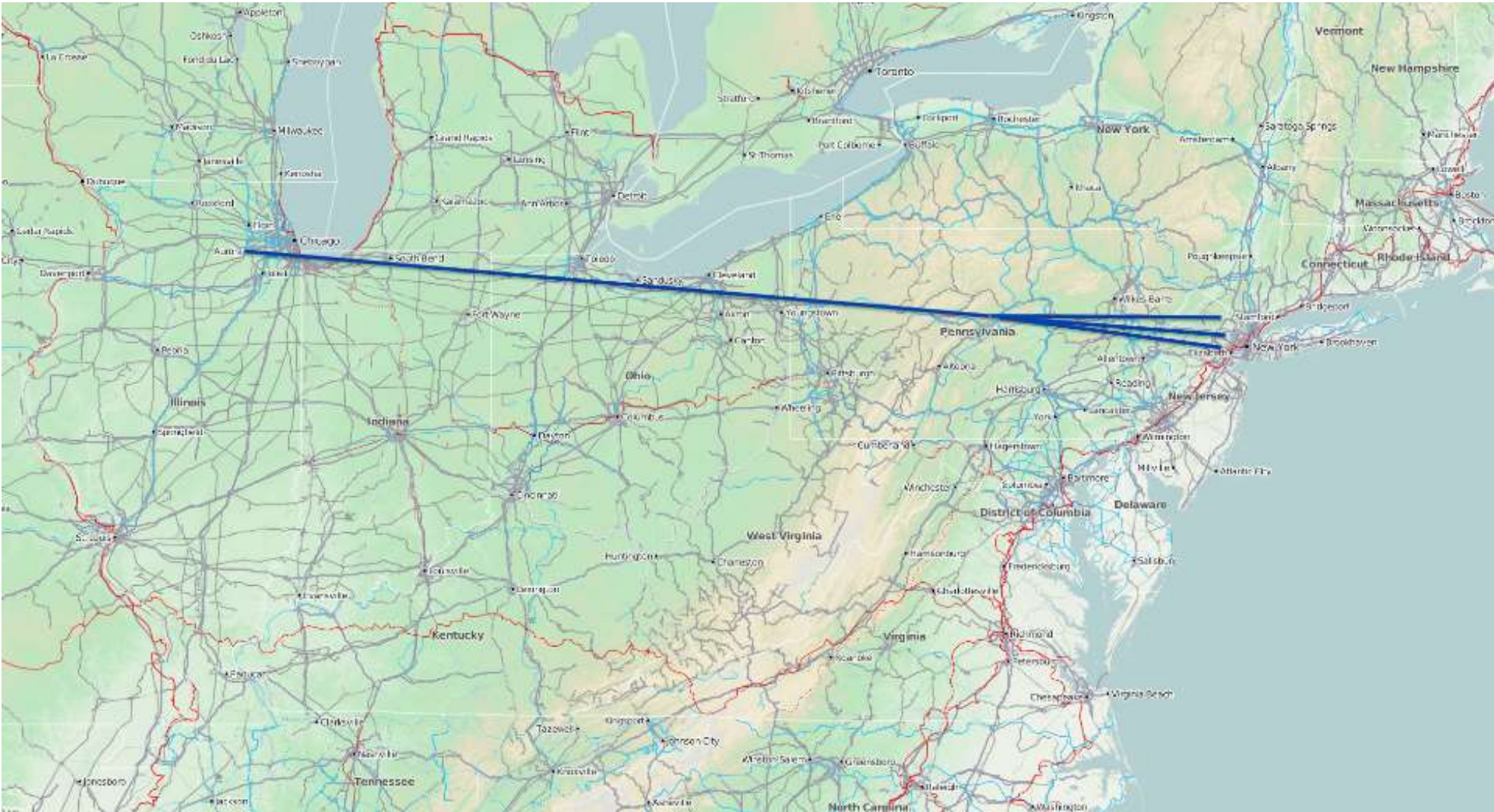
Average PLR during PSH (%)





# What next?

5

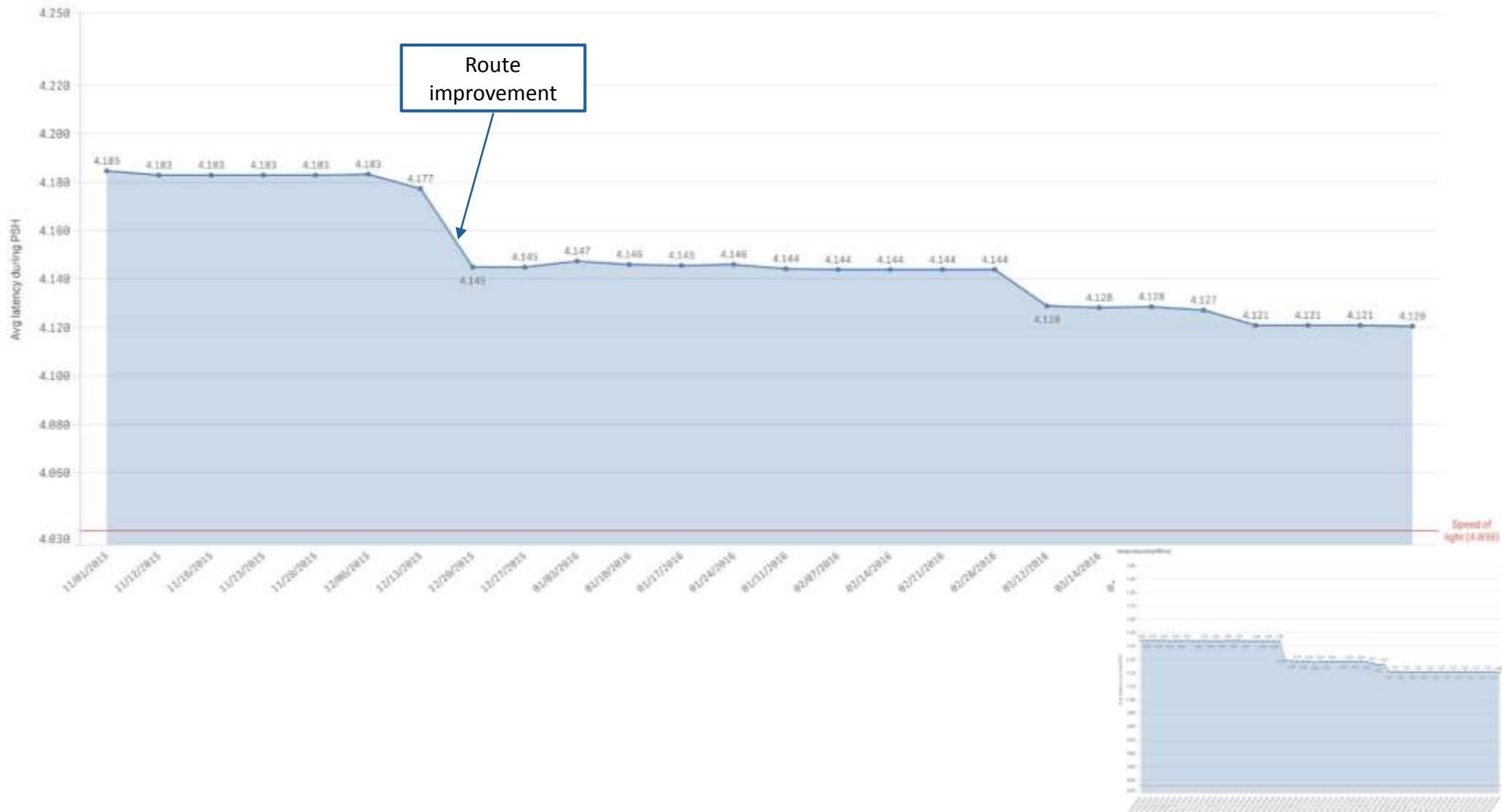


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# BAS to FR2 last 6 months (41μs)

- Average latency by week – November 2015 to April 2016



# Discussion of the new Eiffel Towers

7



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# Discussion of the new Eiffel Towers

8



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# Discussion of the new Eiffel Towers

9



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# Discussion of the new Eiffel Towers

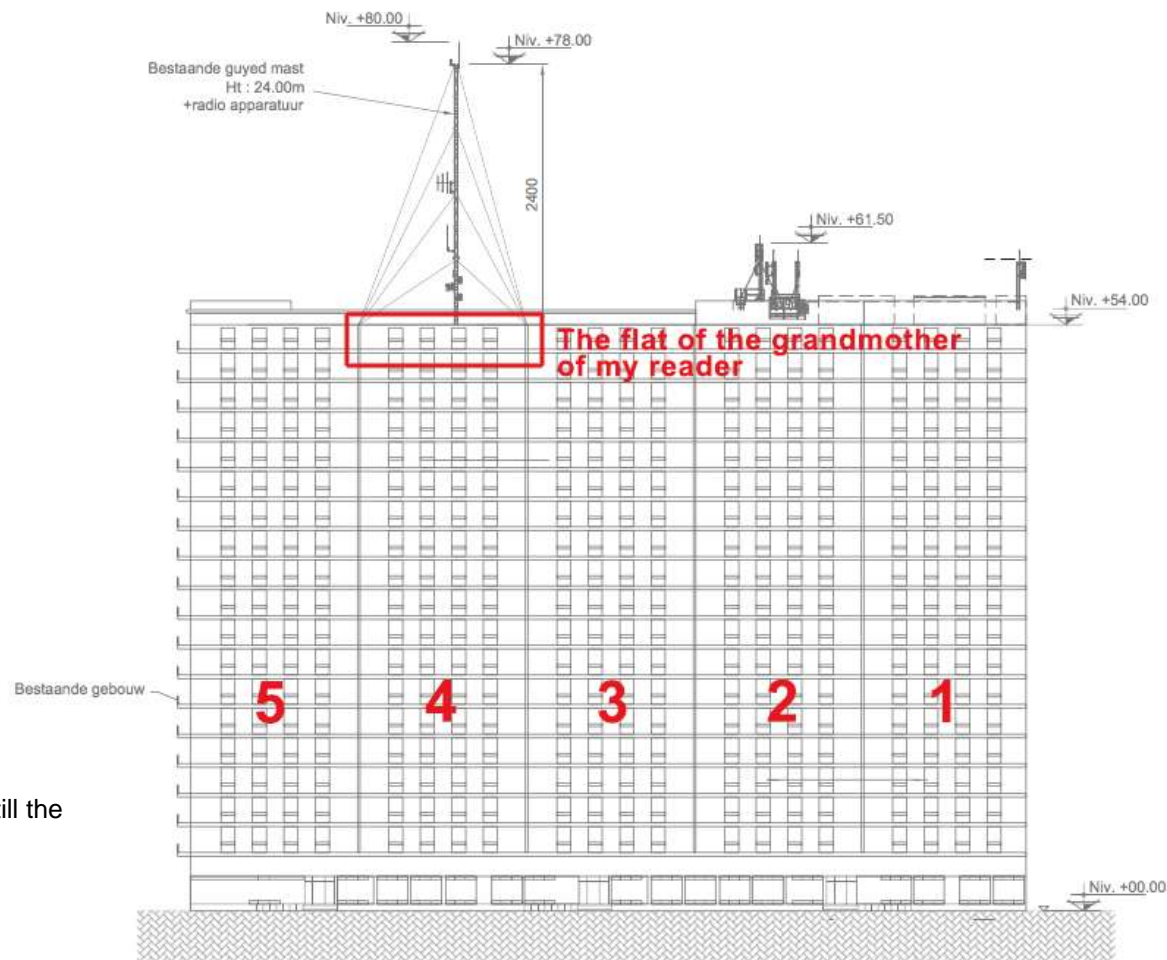
10



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# Read the Sniper in Mahwah

11



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This is not an endorsement, but this is still the  
best source of information

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**Jitter is an equalizer**

**McKay < Speed of light + Jitter**

**McKay < Competitor - Jitter**

# What Jitter?

13

## Sources

- Data reception (direct exchange feeds and outside data)
- Private feeds vs public feeds
- Data processing (Algorithm variety)
- Order sending

## Nature

- Random in time
- Fixed but not equal for different participants



# Market Data Jitter

14

- Nasdaq discussion
  - No equal cross connect
  - Very little jitter on the distribution side
- ICE/Cermak
  - Interesting situation with two locations
  - show the change in time
- Basildon (LIFFE UK / Euronext)



# Order sending Gateway Jitter

15

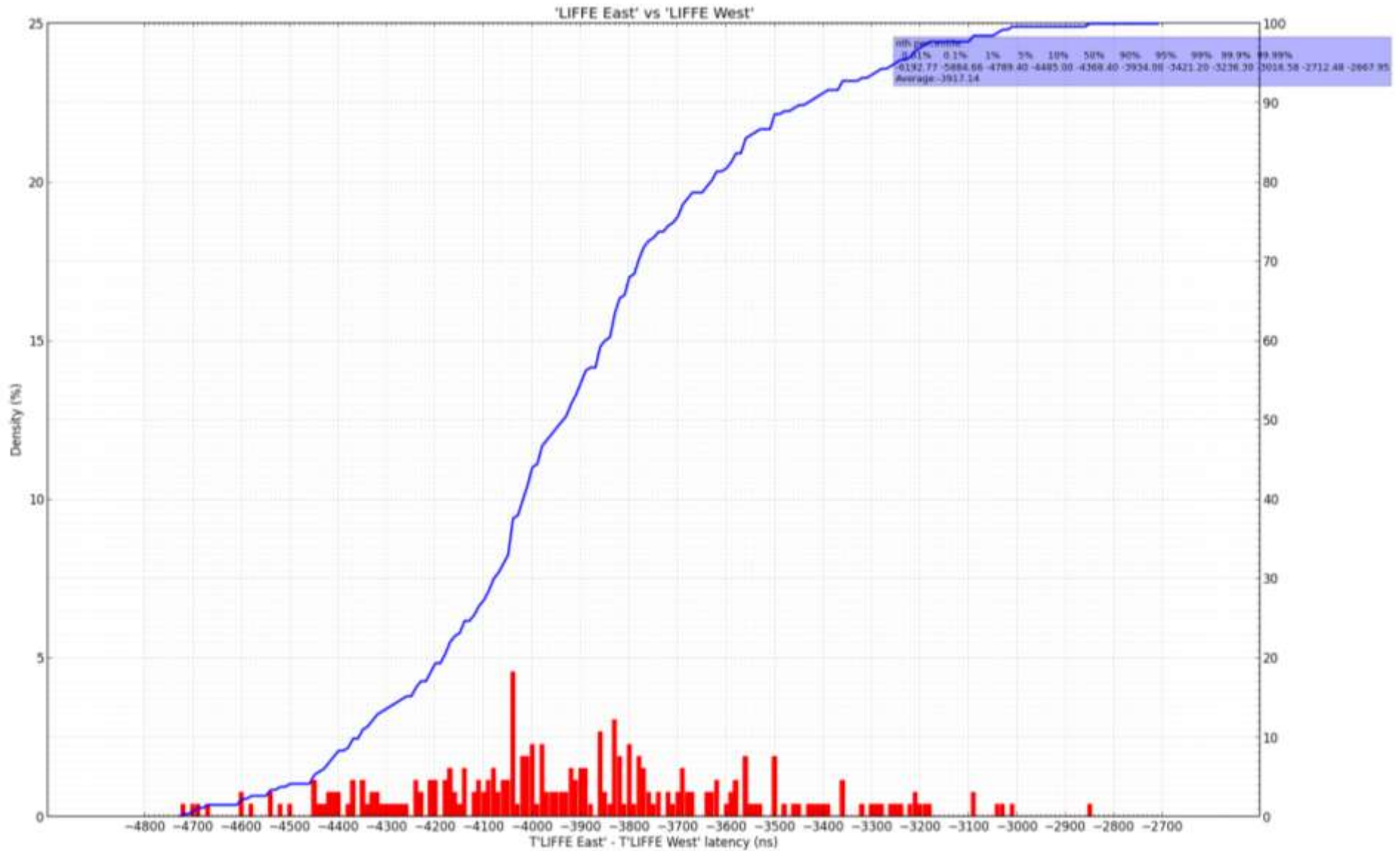
FIFO was introduced by CME and generalised recently, this is an important dev.

Number of « obvious signals » is going down as everyone is getting more sophisticated.



# Market data Jitter

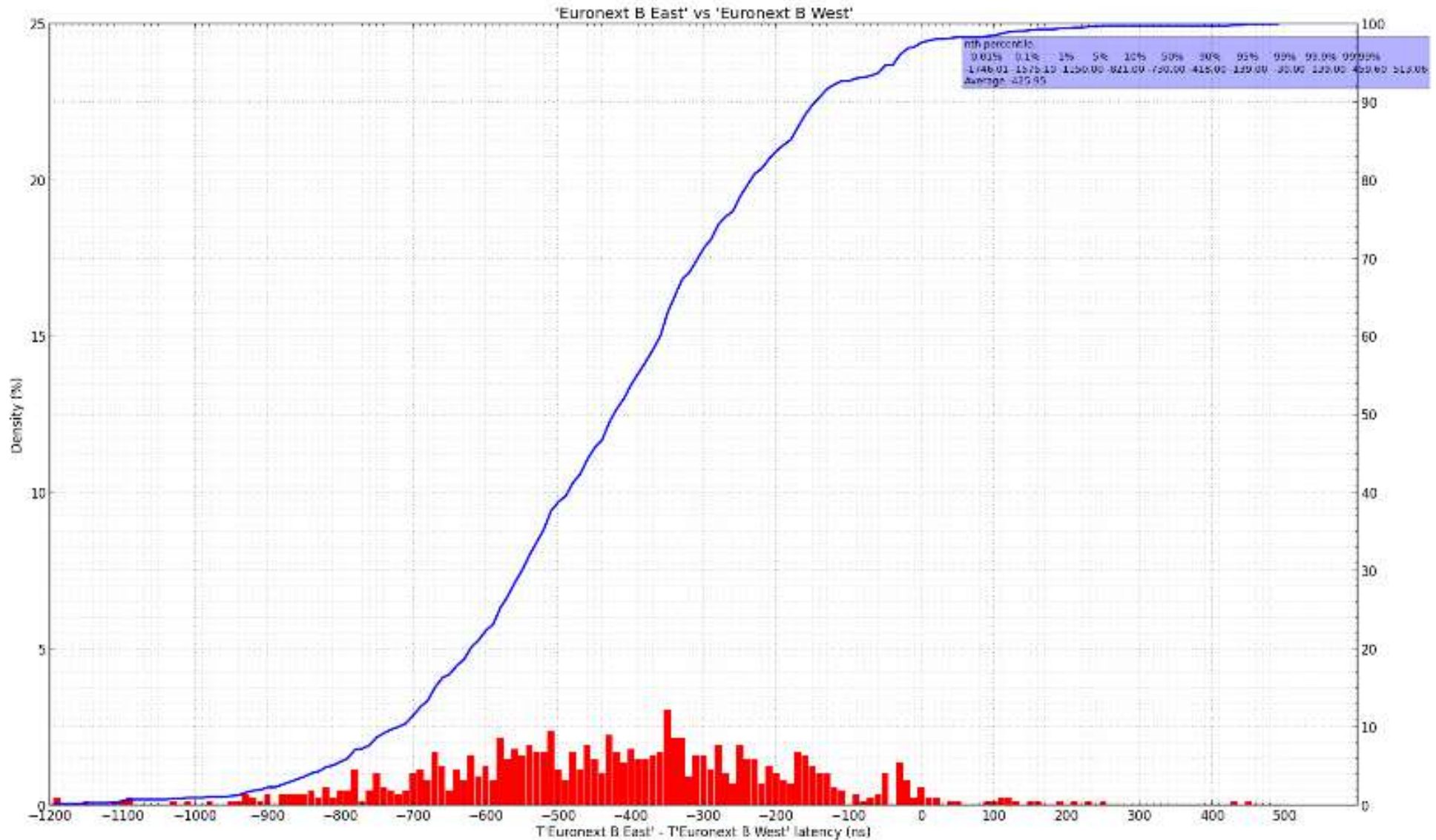
16





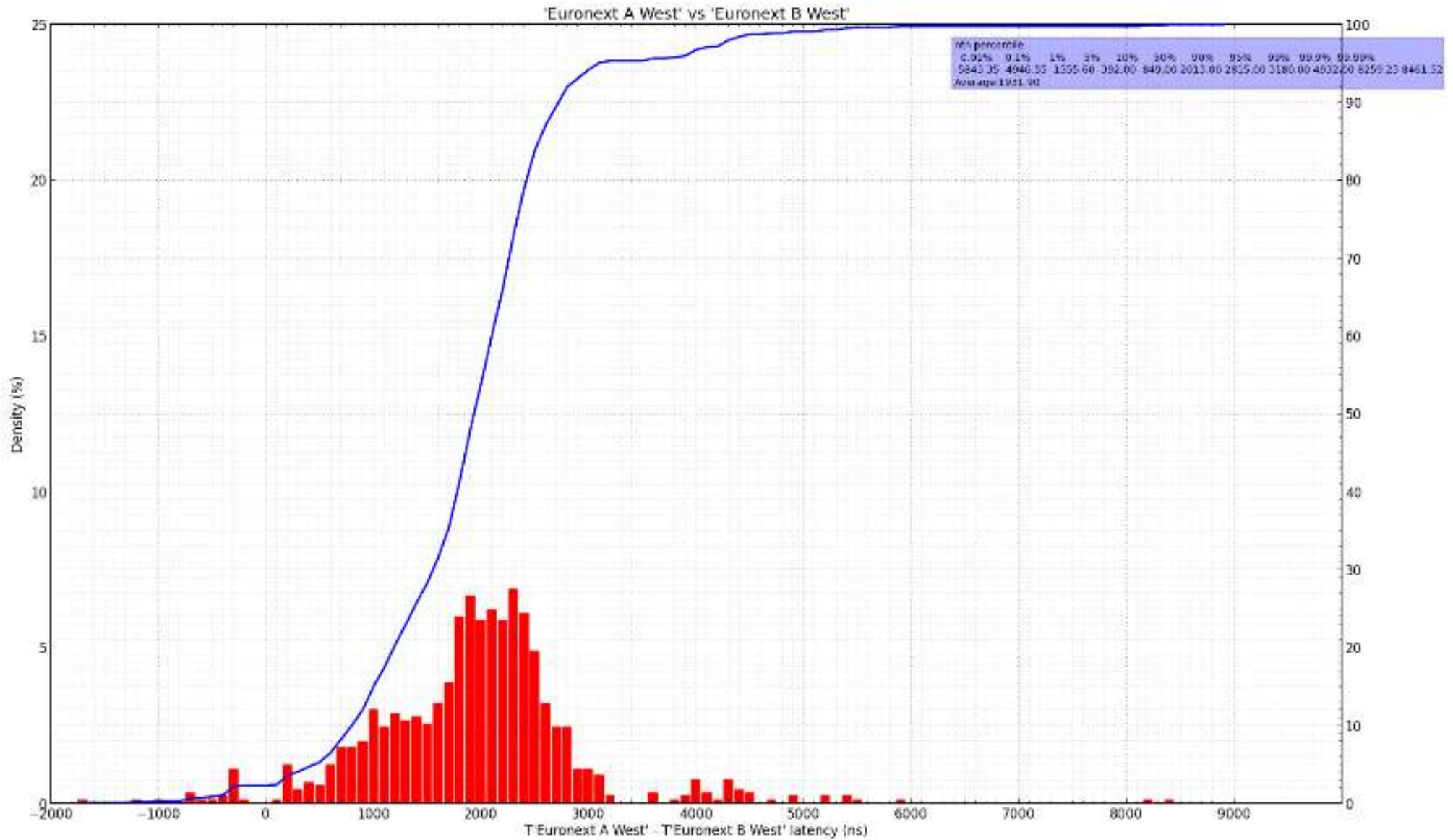
# Market data Jitter

17



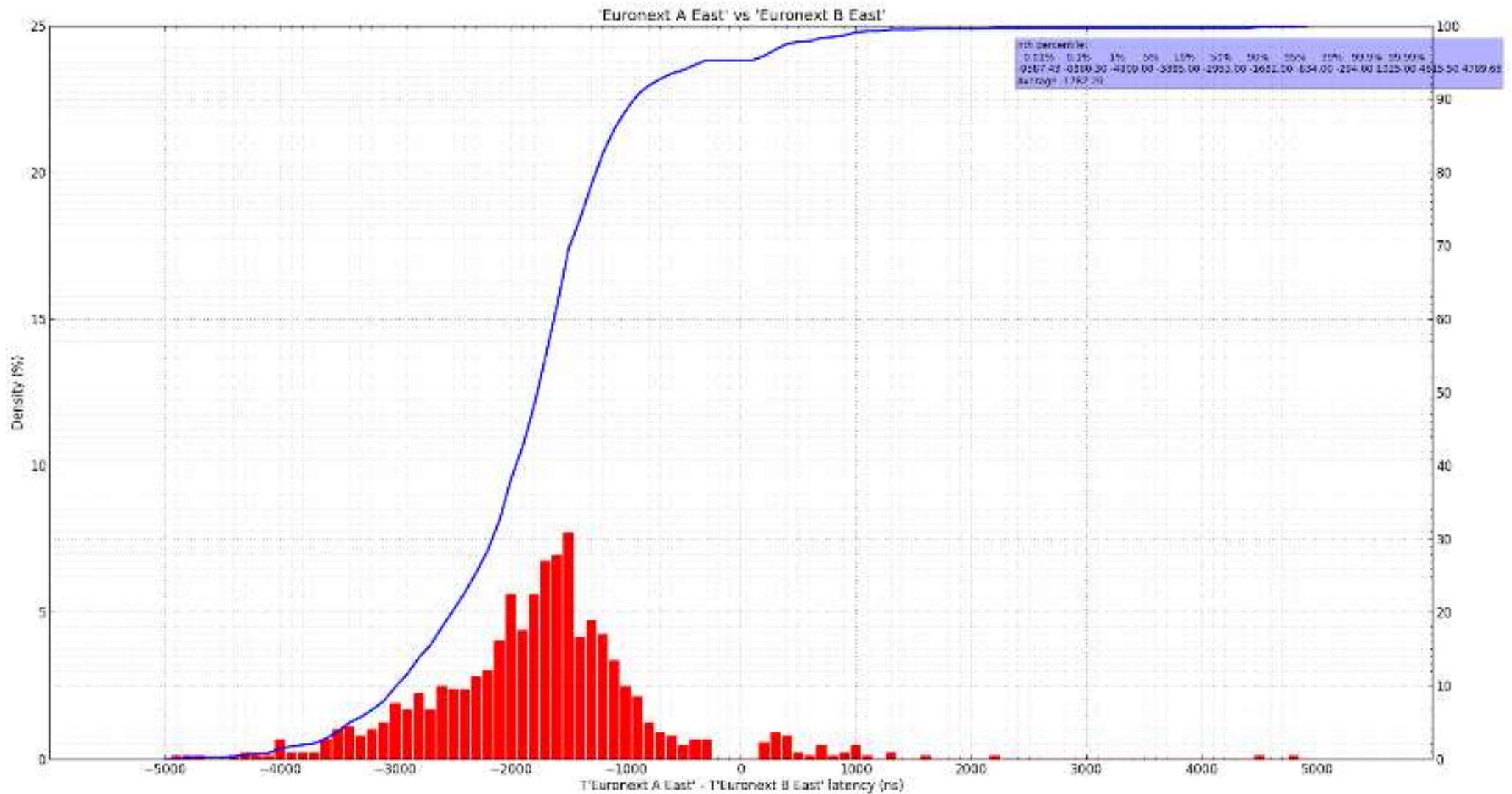
# Market data Jitter

18



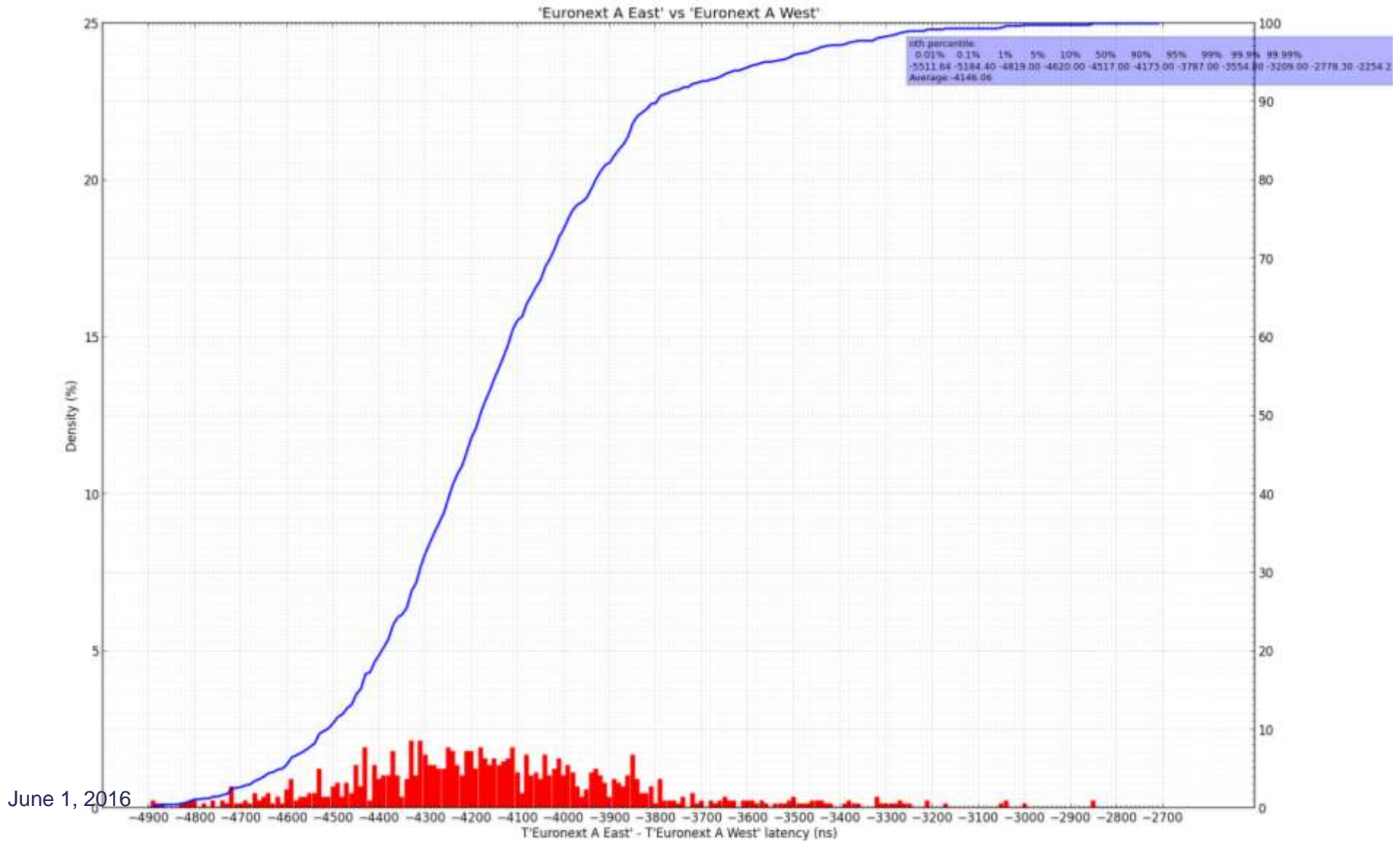
# Market data Jitter

19

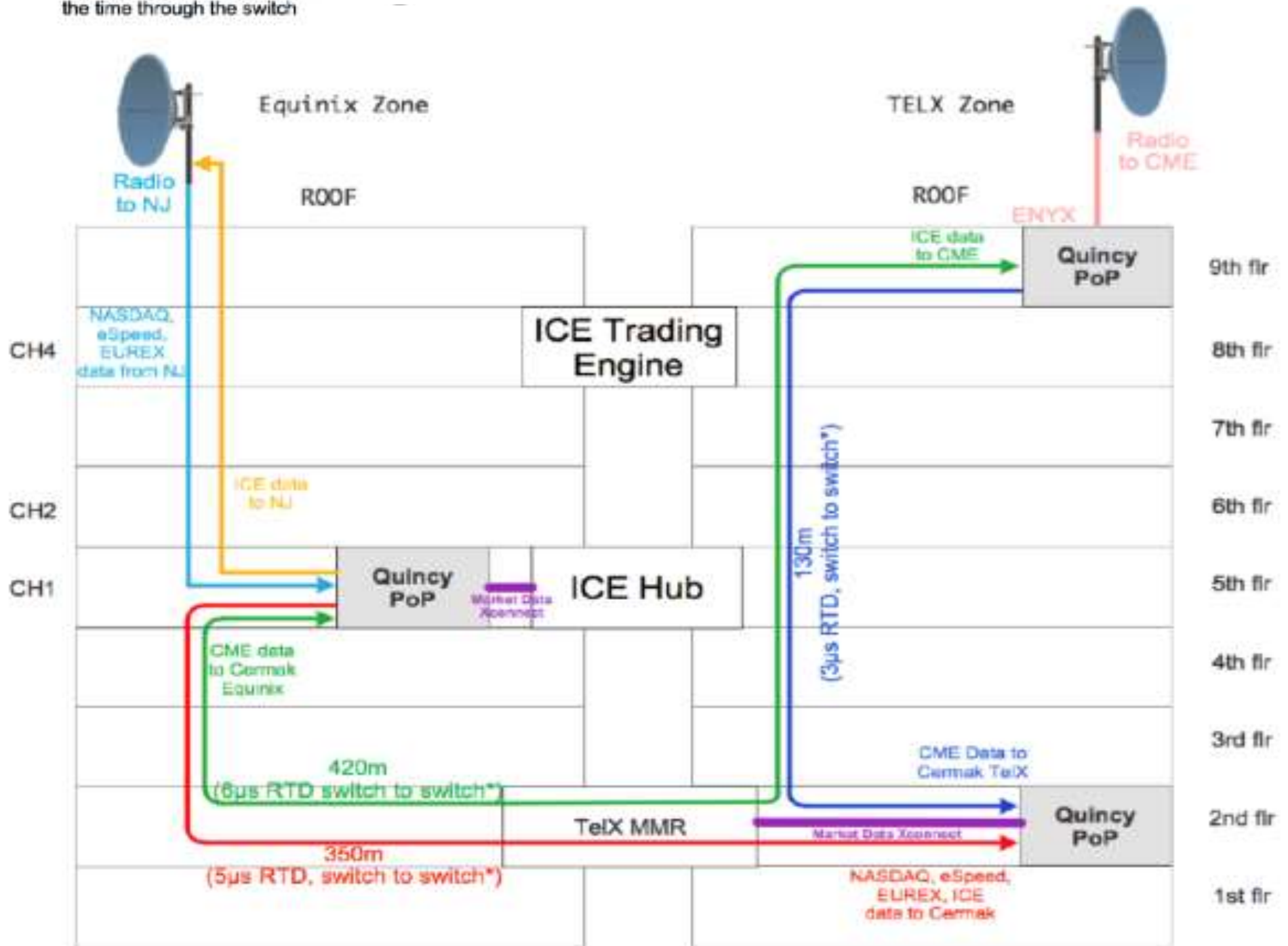


# Market data Jitter

20

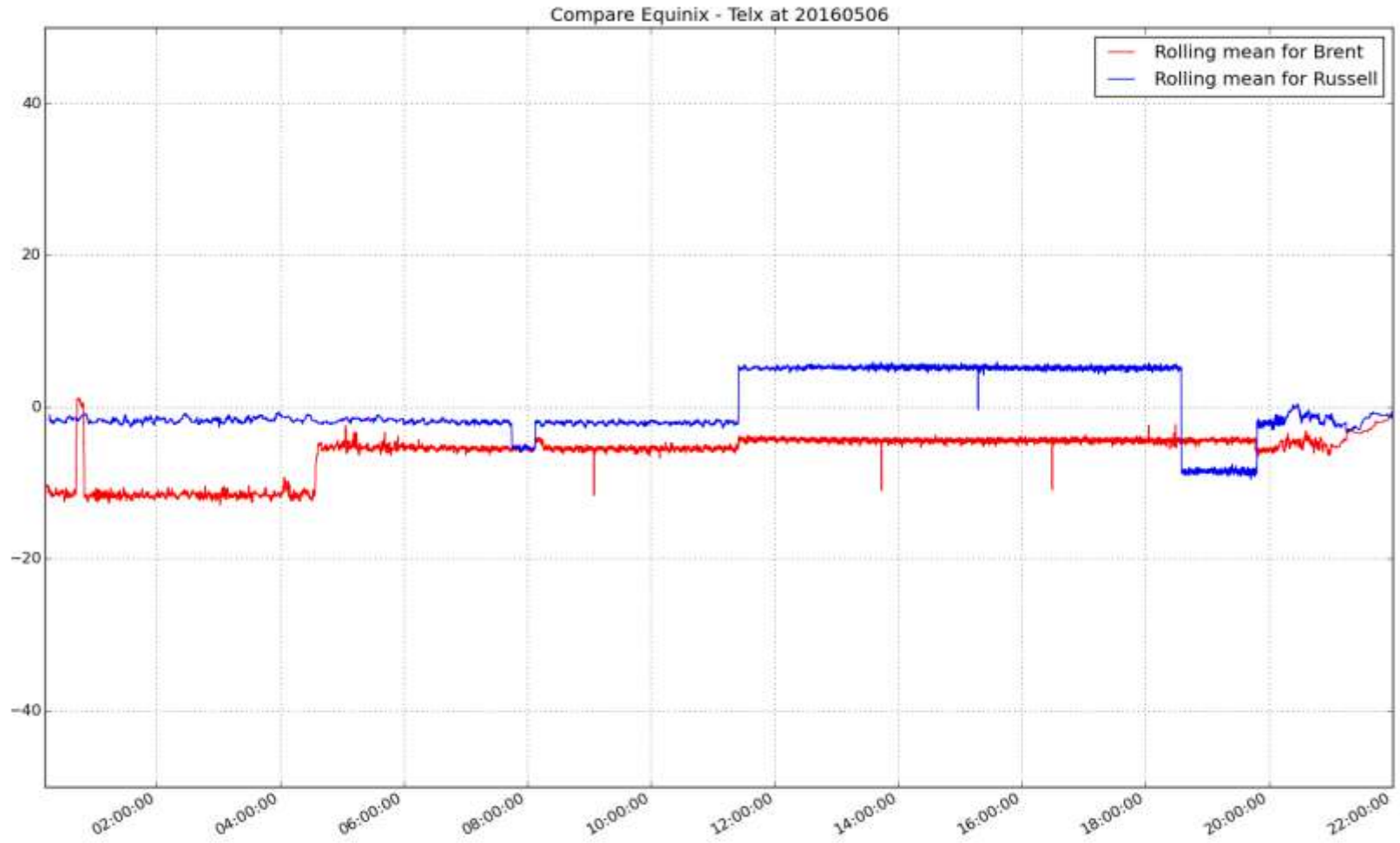


\*switch to switch latency includes the time through the switch



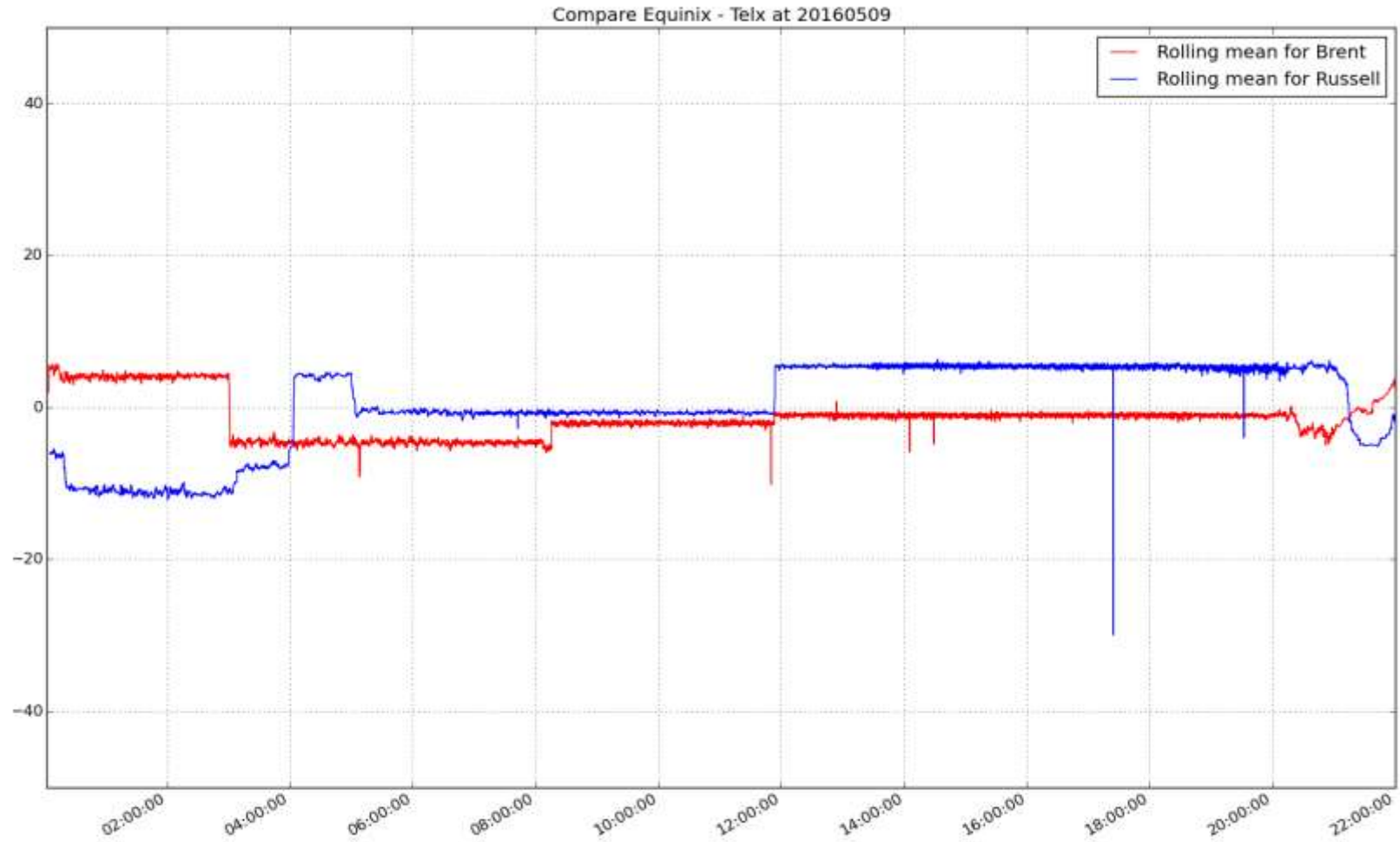
# Gateway Jitter

22



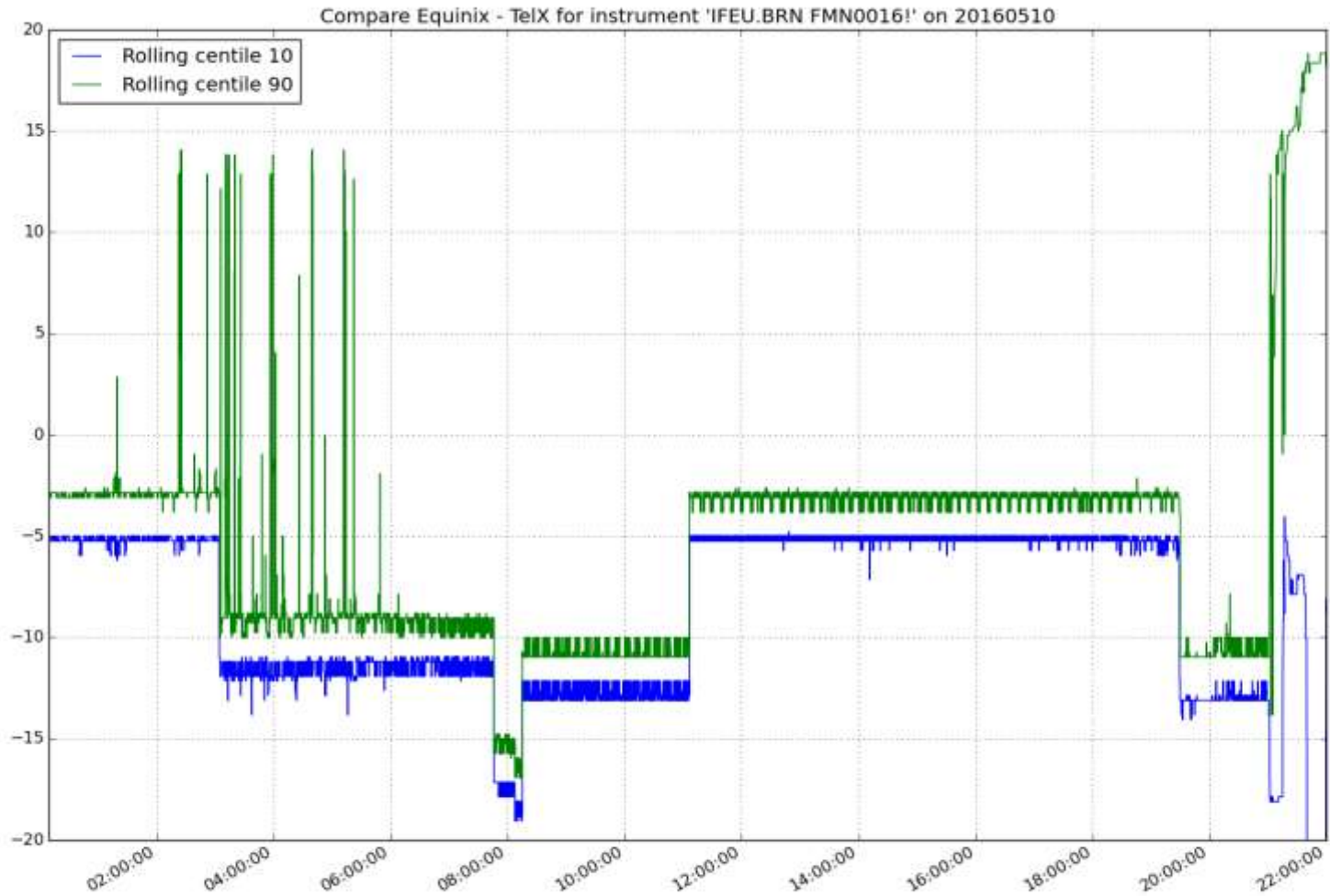
# Gateway Jitter

23



# Gateway Jitter

24





# Gateway Jitter

25

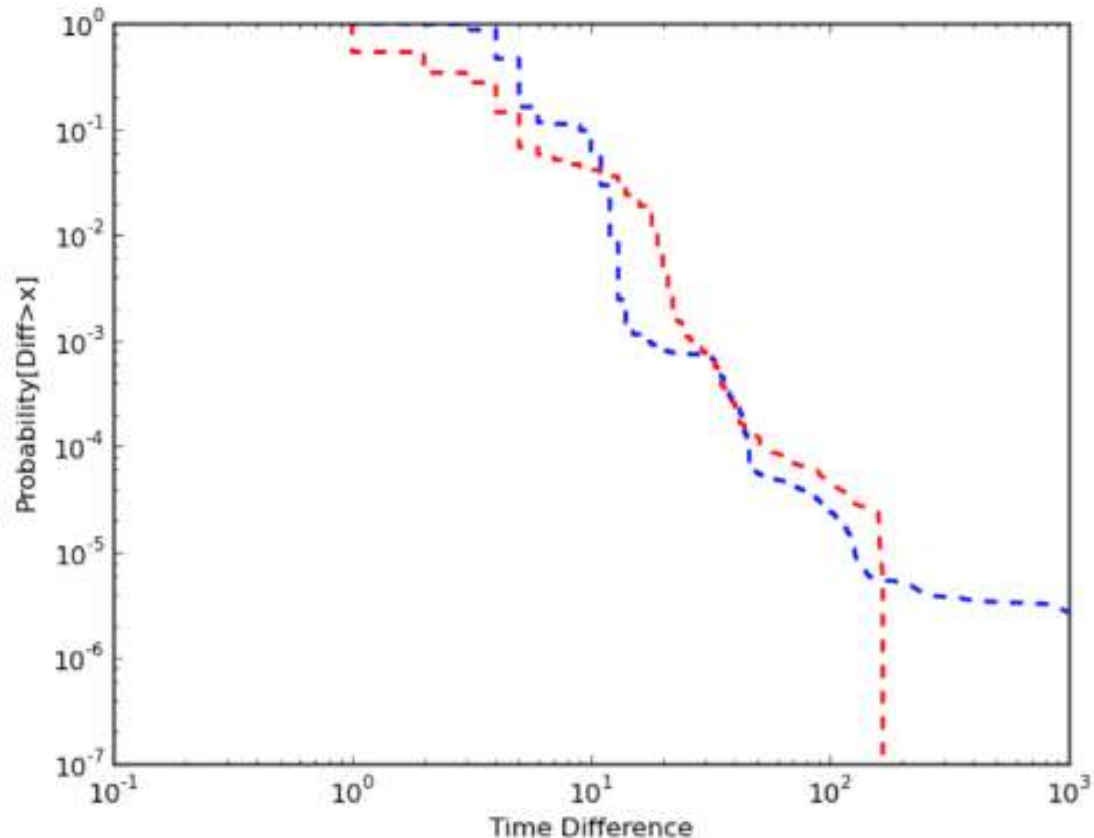


Figure 6: Brent Crude complementary June maturity cumulative probability distributions in log scales for positive and negative differences May 5th 2016. Time differences in the x axis are in  $\mu\text{s}$ . Positive difference in red, negative difference in blue.

# Gateway Jitter

26

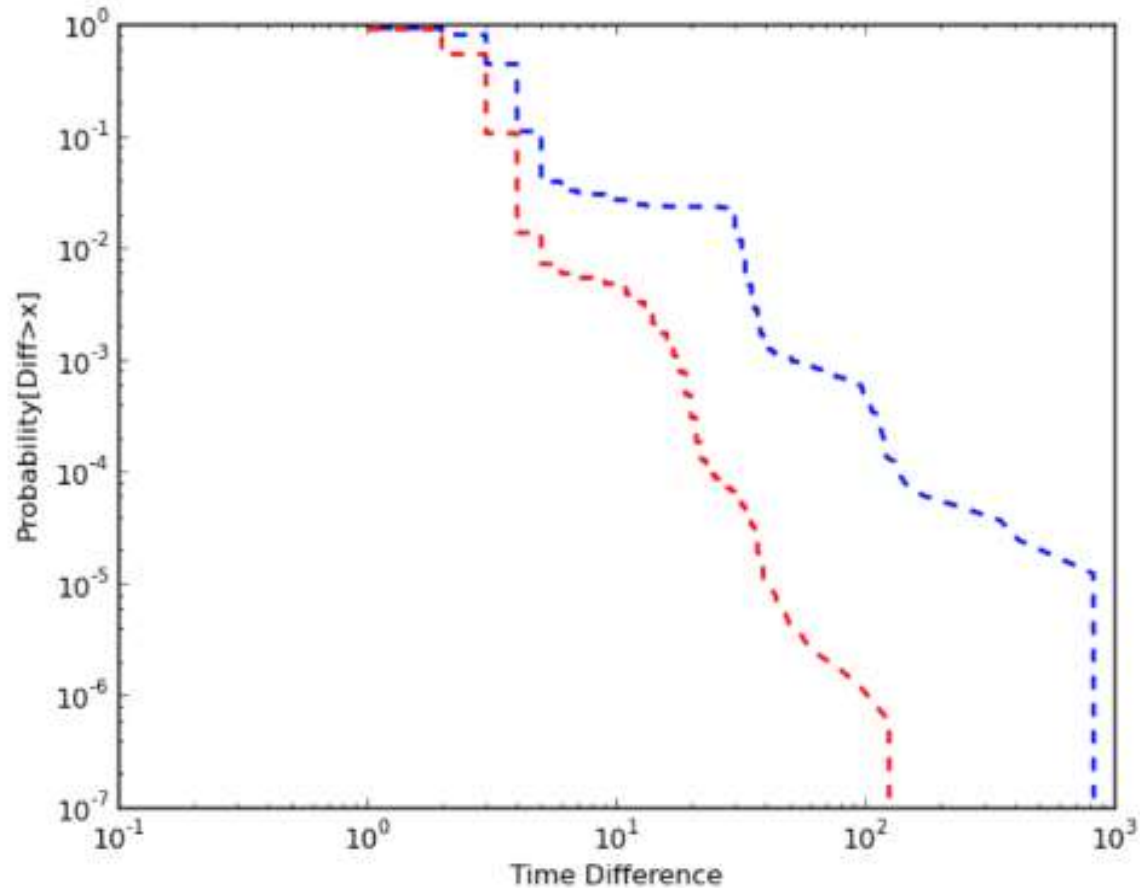


Figure 7: Russell 2000 Index Mini July maturity complementary cumulative probability distributions in log scales for positive and negative differences May 5th 2016. Time differences in the x axis are in  $\mu\text{s}$ . Positive difference in red, negative difference in blue

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## Are We Moving To A Winner Takes All Situation?

- Too early to call
- Answer will depend on trades
- Anticipation will always play a role

# Thank you for your questions

