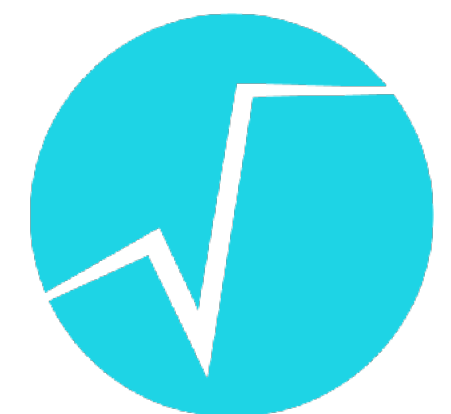


eHighLO: Reducing the Cost of the Energy Transition

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“In the light of the recent volatility, the Commission tasked the Agency for the Co-operation of Energy Regulators (ACER) to assess benefits and drawbacks of the current wholesale electricity market design, including its capacity to address situations of extreme price volatility in gas markets.”

–EU, State of the Energy Union Report 2021

“Volatile energy markets and record-high commodity prices are prompting renewed interest from investors eager to play in the sector”

–NYT: Energy Trading, Without a Certain "E"

“Gold prices don't go up just because jewelers need more gold,
they go up because gold is an investment”

–NYT: Trading Frenzy Adding to Rise in Price of Oil

“Electricity market design requires care in providing the necessary features and rules to support an efficient market. Ideally, behavior that violates these rules and exploits market flaws should be prohibited and subject to enforcement sanctions.”

–William W. Hogan: Electricity Market Design Flaws and Market Manipulation

Effect of Speculation

- Speculation is likely needed to ensure liquidity in energy markets
- Gains of speculation is paid by losses of opposite-side speculation ***and energy price changes paid by consumers***
- Speculation increases cost of energy transformation
- Amount of gains, speculation, consumer loss is not known
- Required regulation needs to navigate in complex environment with big data and multiple agents

Goals of eHighLO

- Help energy market regulators detect fraud and improve rules using HEP tools and techniques, for society's benefit
 - Understand effects of regulations
 - Consult regulators
 - Provide tooling and algorithms
- And: measure the extent of the problem, publish findings in key journals

HighLO

- KT agreement KN4505/KT/EP/914C between CERN's ROOT Project, Wageningen University, Wageningen Economic Research, CORMEC (Commodity Risk Management Expertise Centre) Foundation
- Since 3 years, just extended for 3 more years (thanks, KT!)
- Goal: help financial market regulators detect fraud and improve rules using HEP tools and techniques, for society's benefit
 - Focus on markets trading futures contracts
- Publications; progress "actively observed" by several regulators (EU and US)

HighLO for Electricity Markets

- CERN provides expertise and tooling for deriving insights from data, using statistical analysis and big data techniques
- The other partners provide finance / market expertise, including energy markets
- Real experts in the field with relevant publications, e.g. Tarek Alskaif: "A Community-Based Energy Market Design Using Decentralized Decision-Making Under Uncertainty"

Why Do We Need Help?

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Why Do We Need Help?

- ROOT provides what HEP needs
- Finance experts want to use ROOT to extract knowledge
- We are missing the expert who builds the missing arc of the bridge!
- Frustrating and incredibly limiting.

In Practice

- 2 years of Senior Applied Fellow
- Consult finance data scientists with efficient data processing with ROOT
- Implement analysis interfaces for time series data in ROOT

“Addressing those challenges using the tools, expertise and Background knowledge at CERN, CORMEC and WUR will enhance social welfare by ensuring that energy market prices reflect all relevant information and thereby, accelerating the energy transition.”

–Agreement KN4505/KT/EP/914C