

# Data compression for digitalized signals from physics experiments

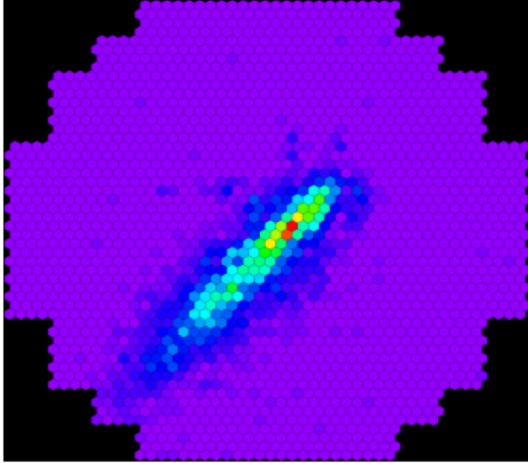
3rd OBELICS workshop

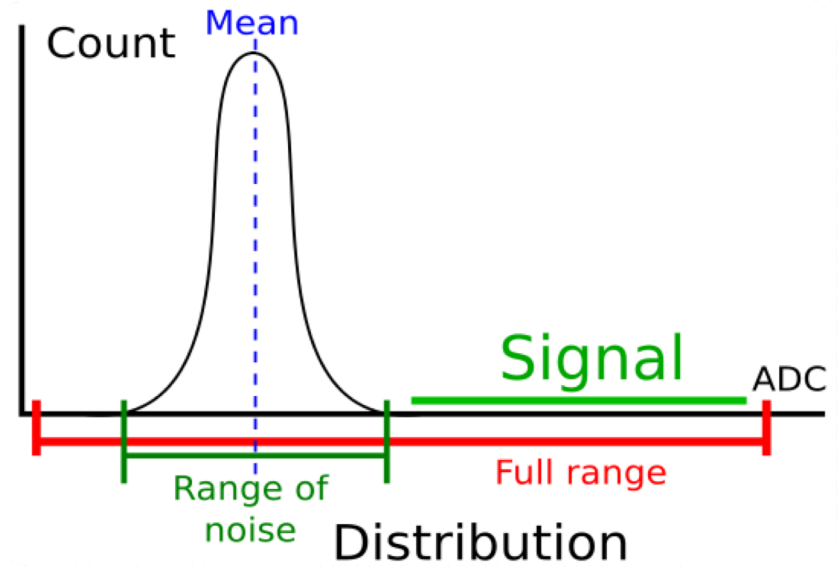
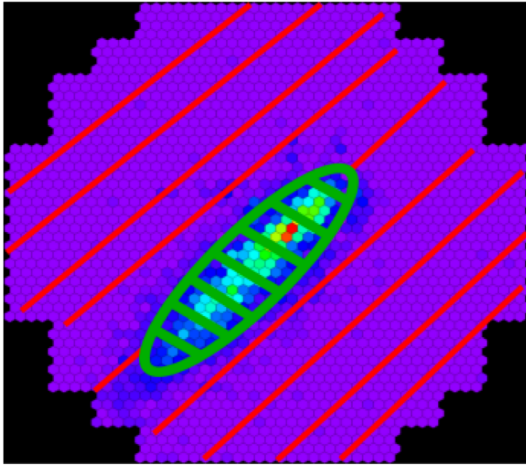
Thomas Vuillaume,  
on behalf of Pierre Aubert\* and the LAPP team

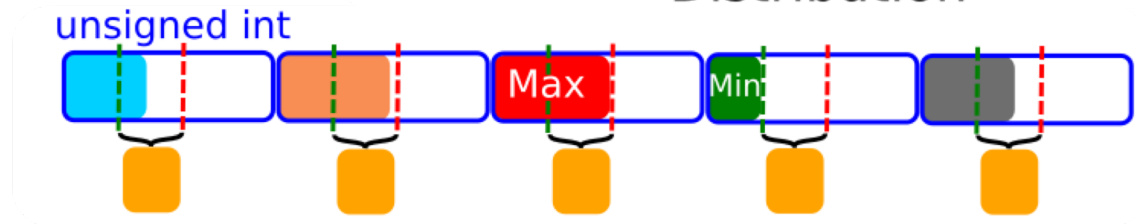
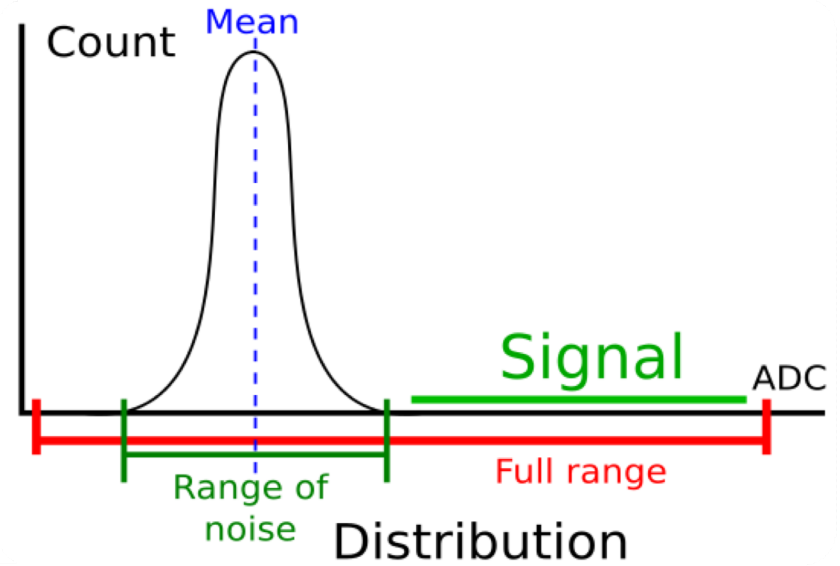
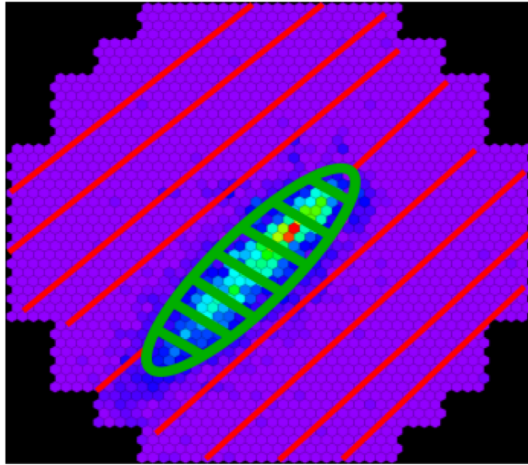
- Current and future science infrastructure generate rapidly increasing data volumes
- Data compression is a major issue that concerns every ESFRI (and beyond)
- Compression can be:
  - Lossy = throwing noise
  - Lossless = don't throw science, please

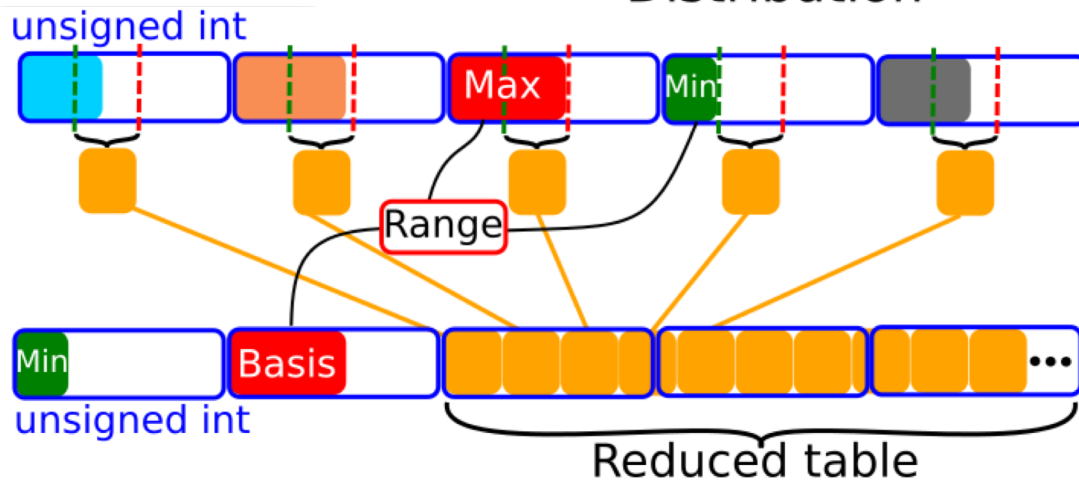
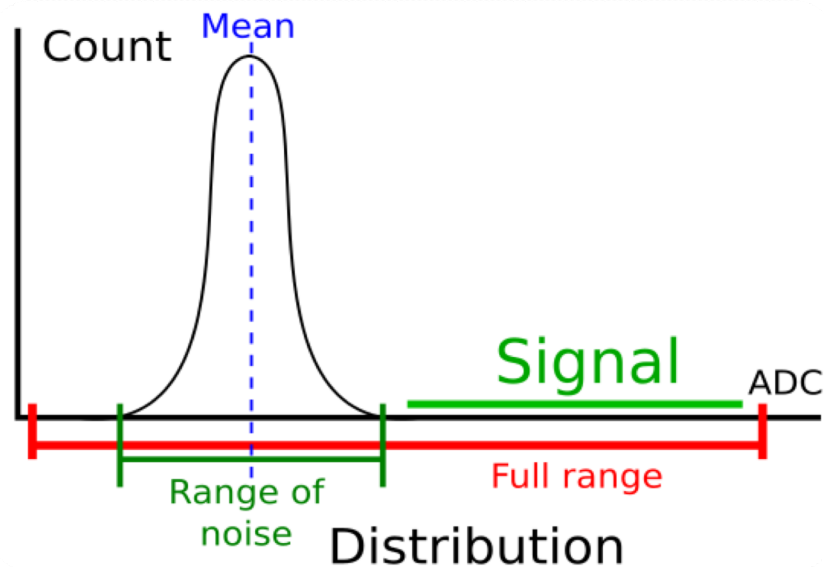
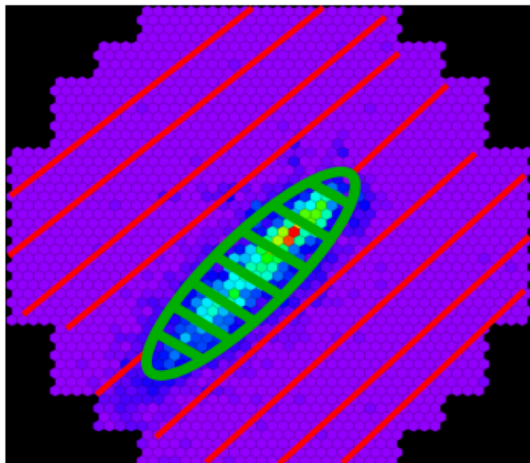
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  - Or is there?

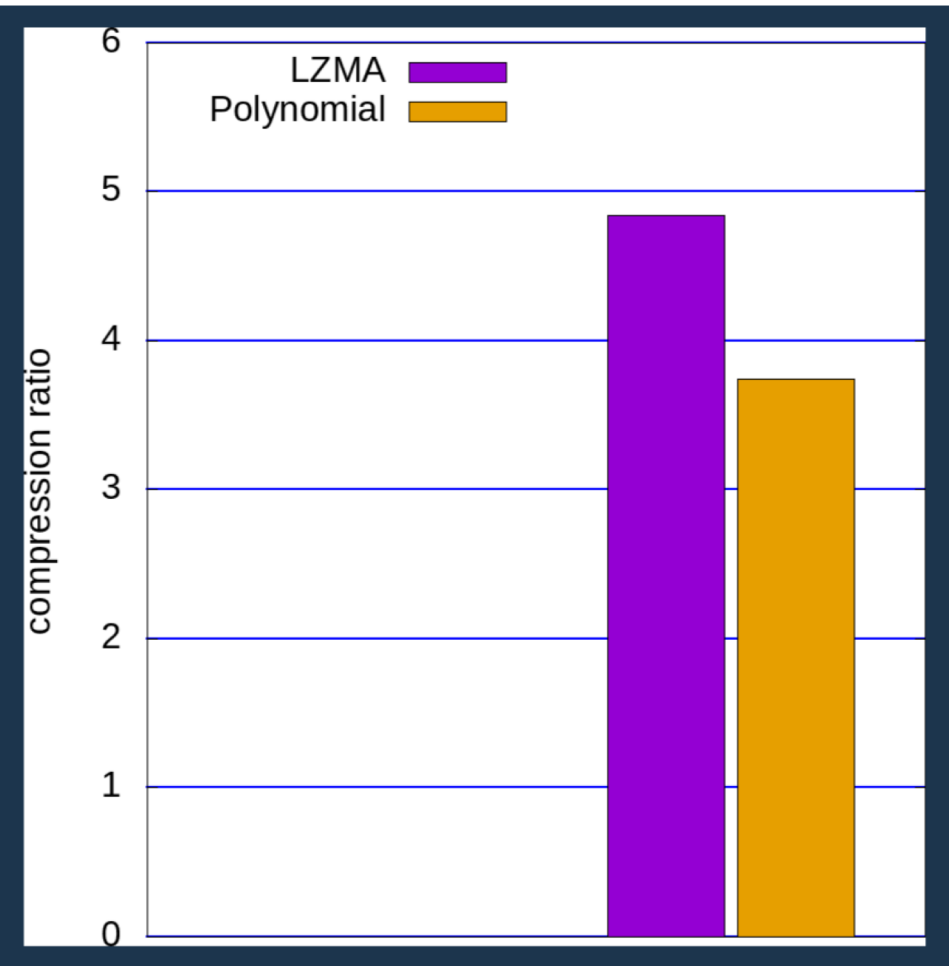


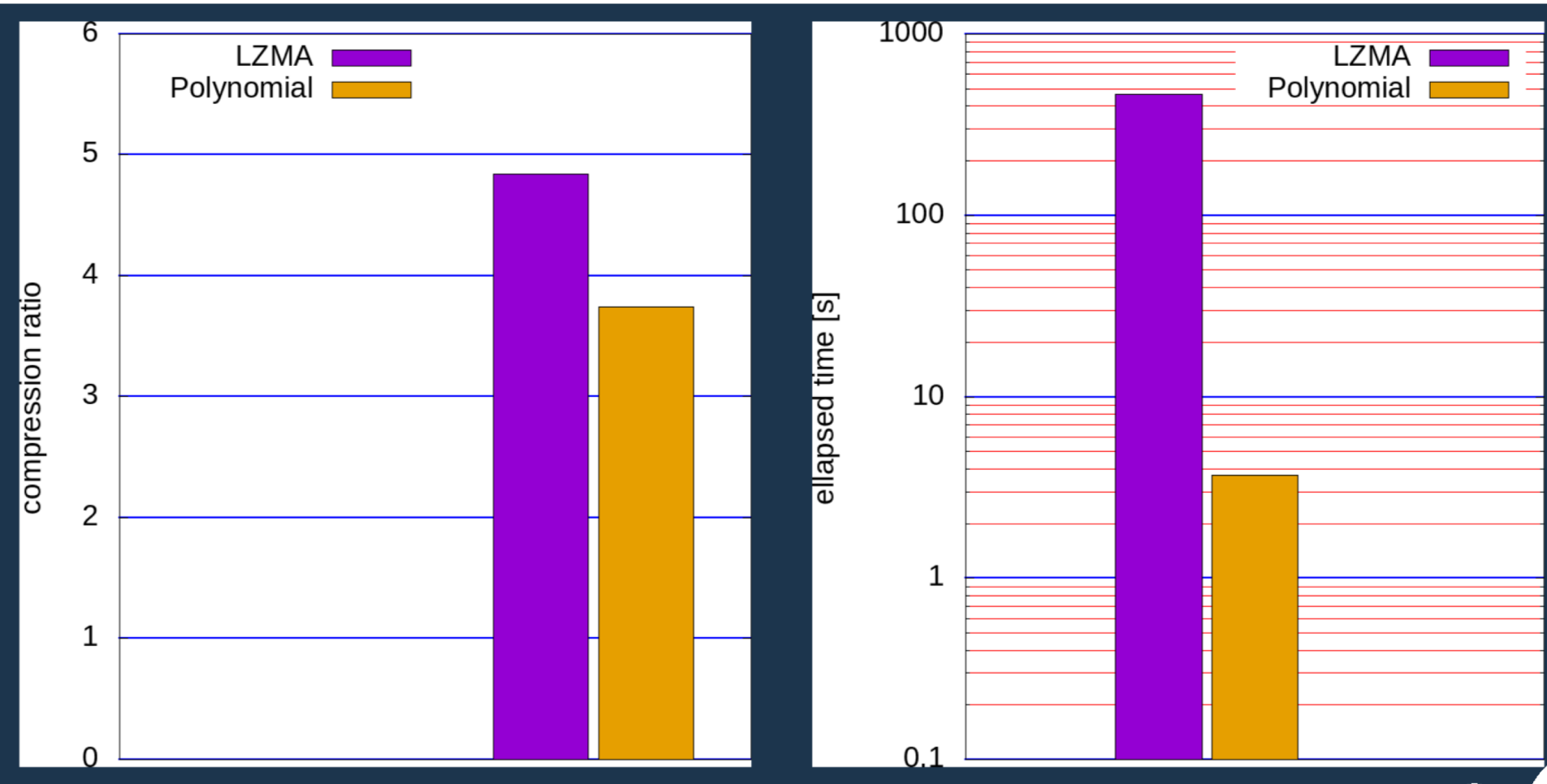


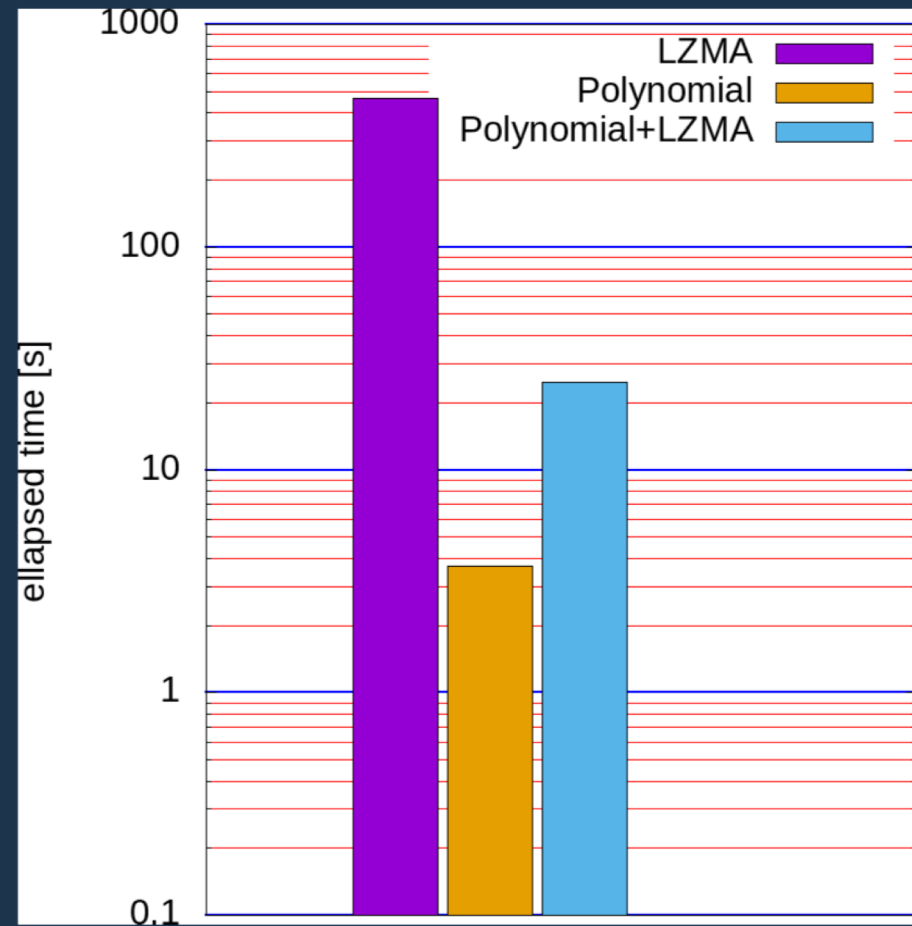
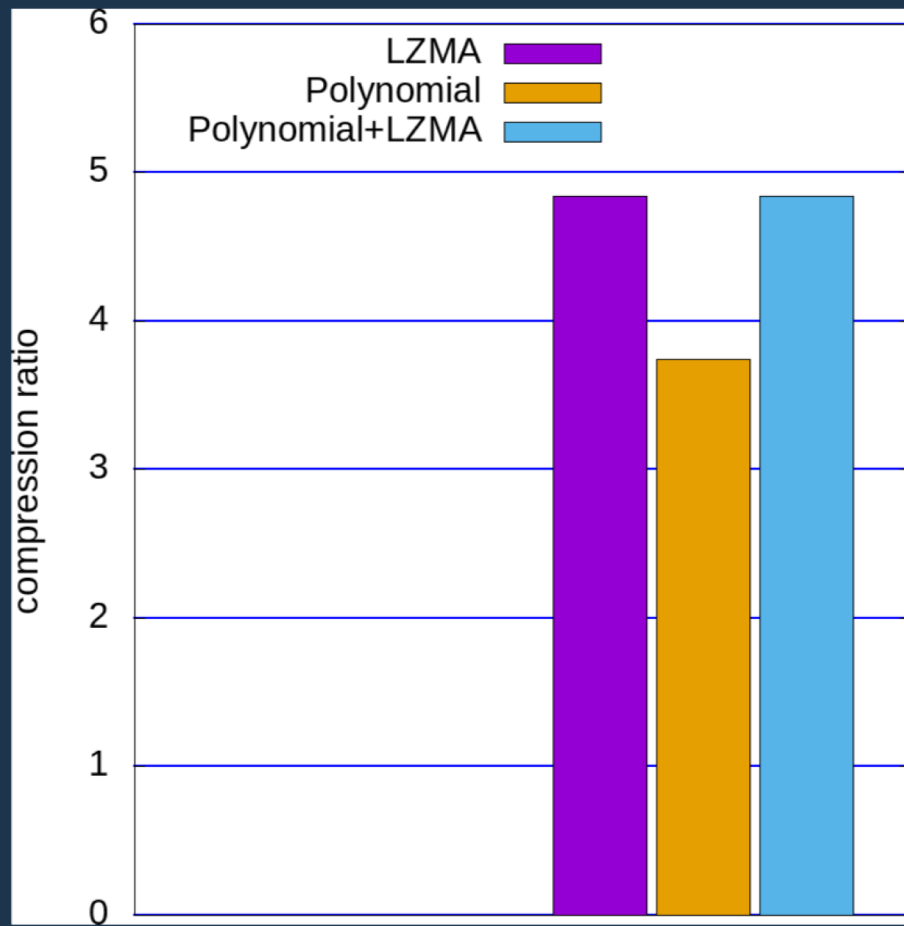


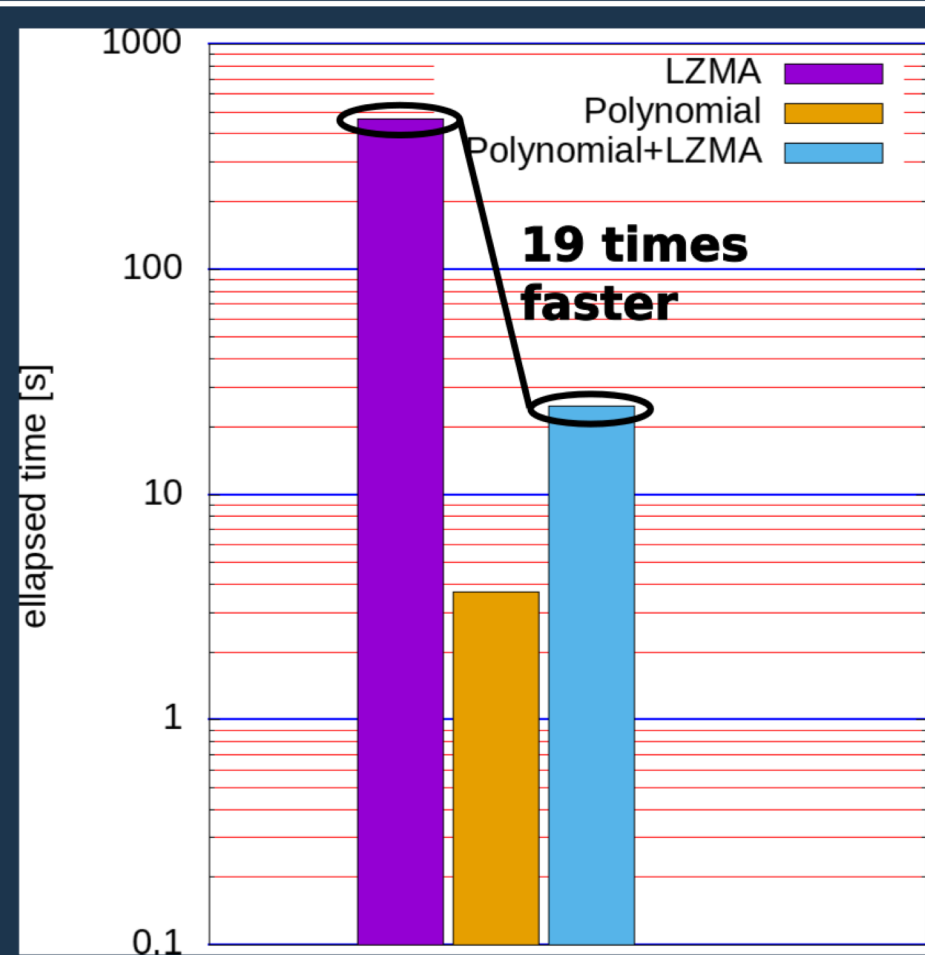
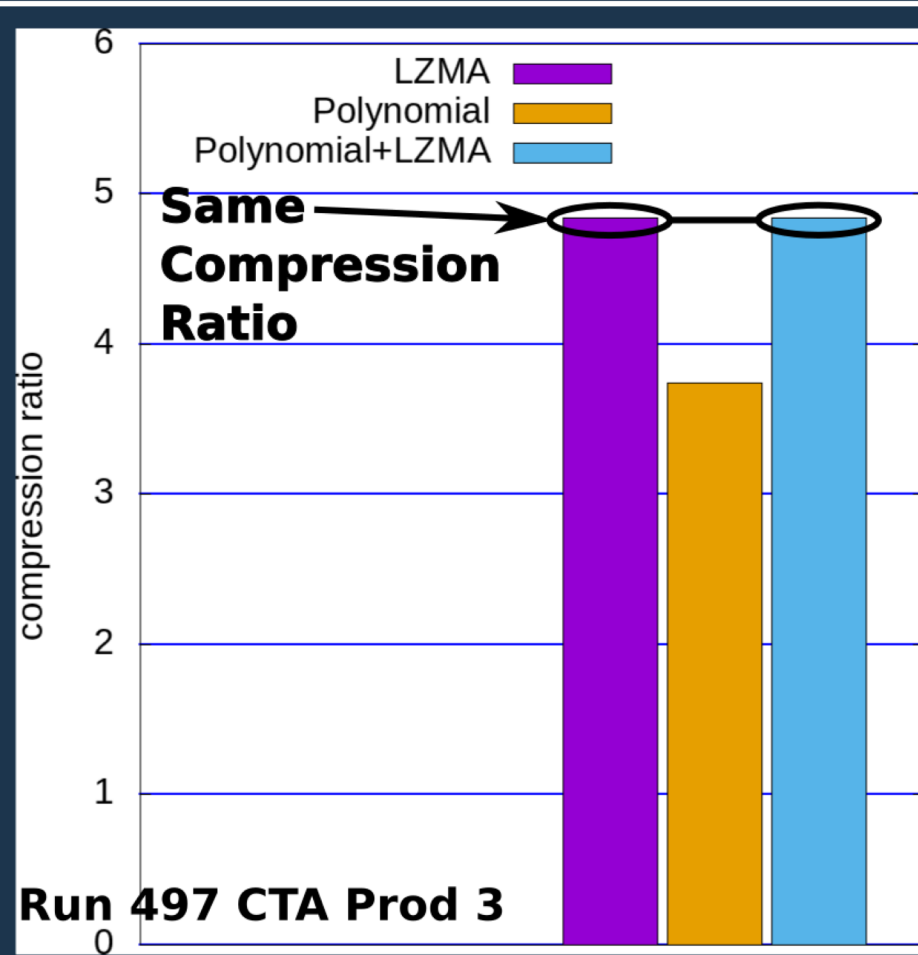


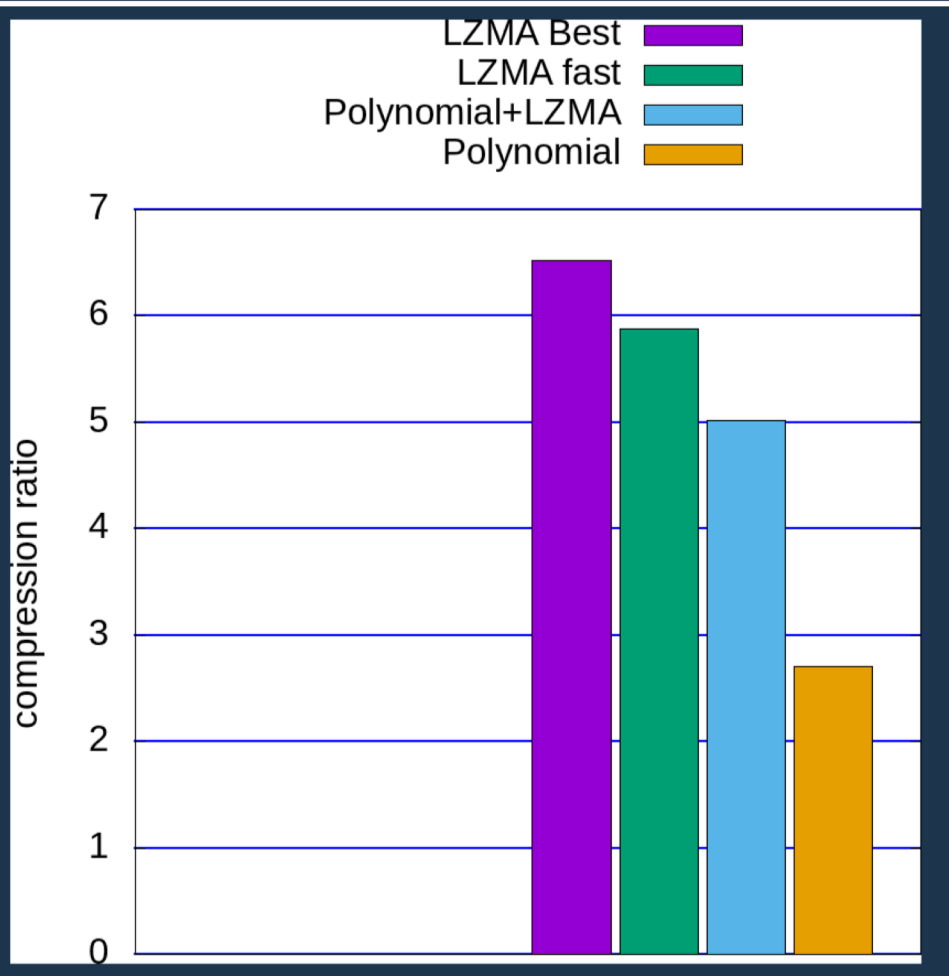


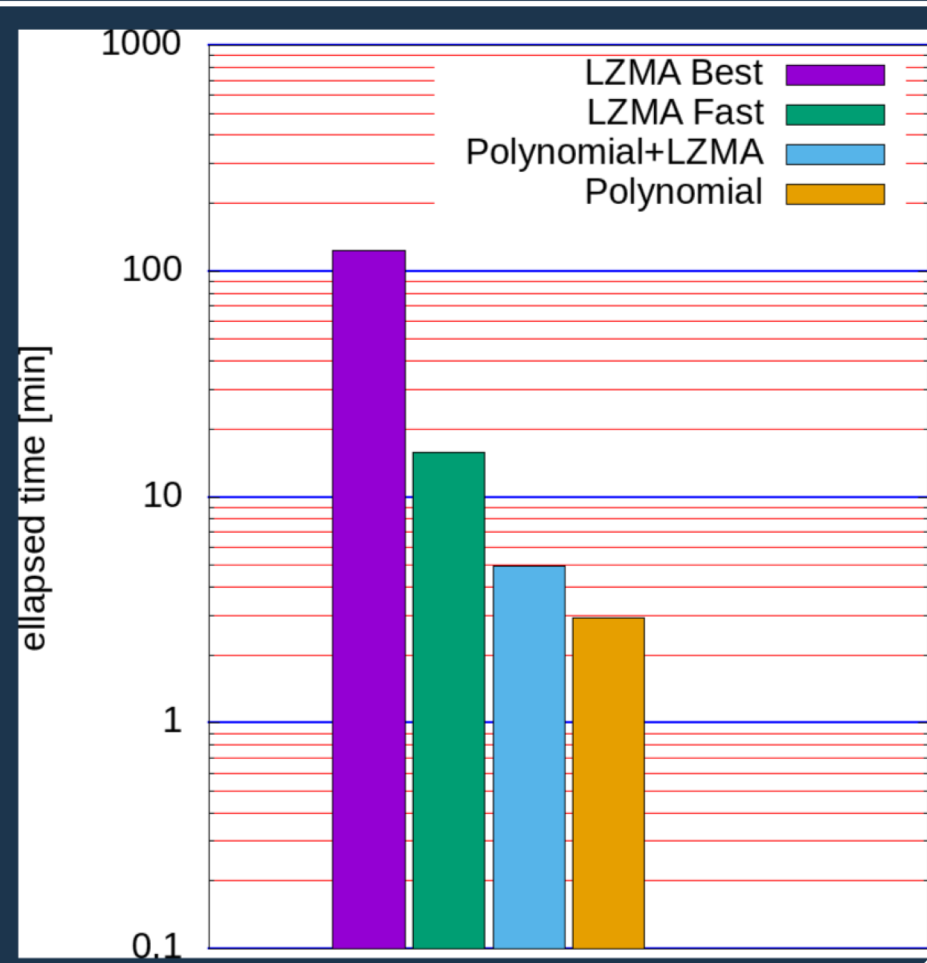
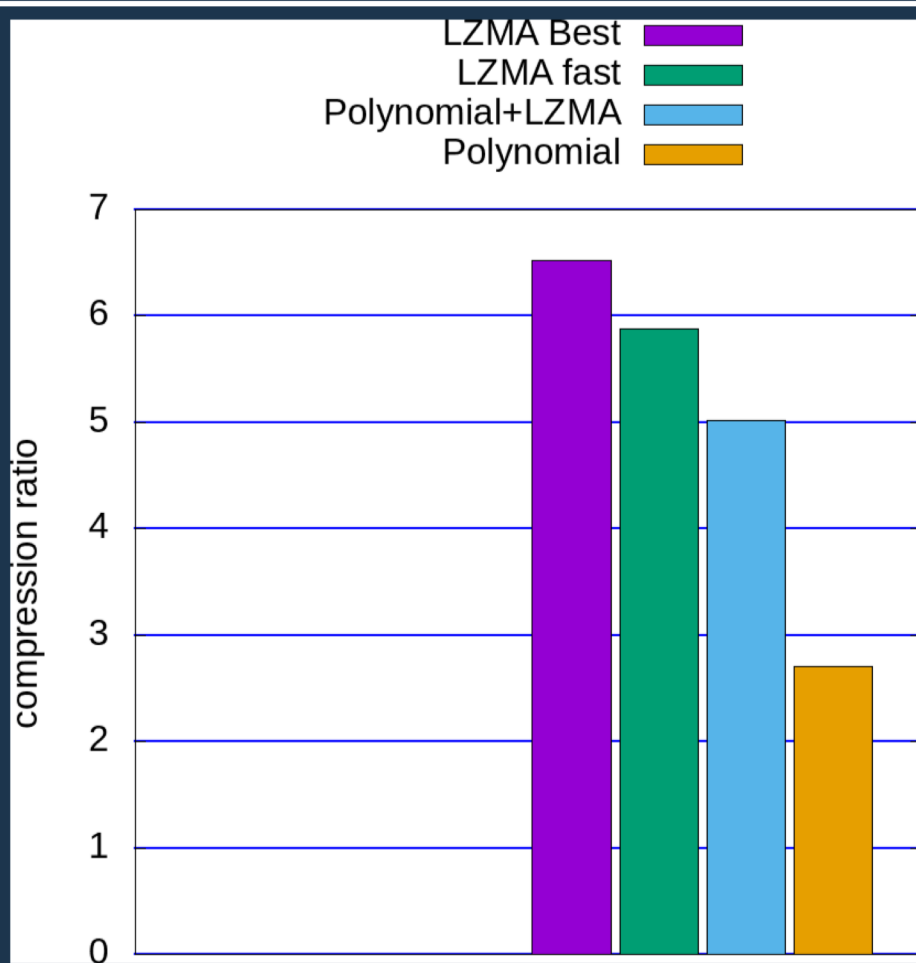


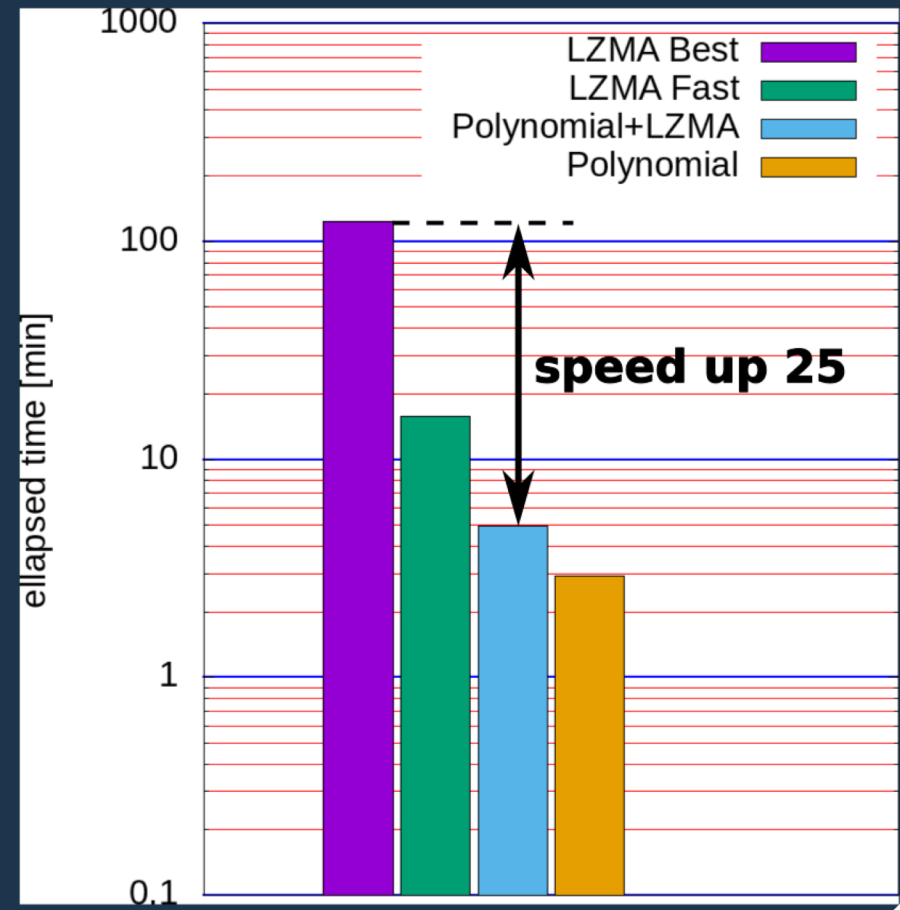
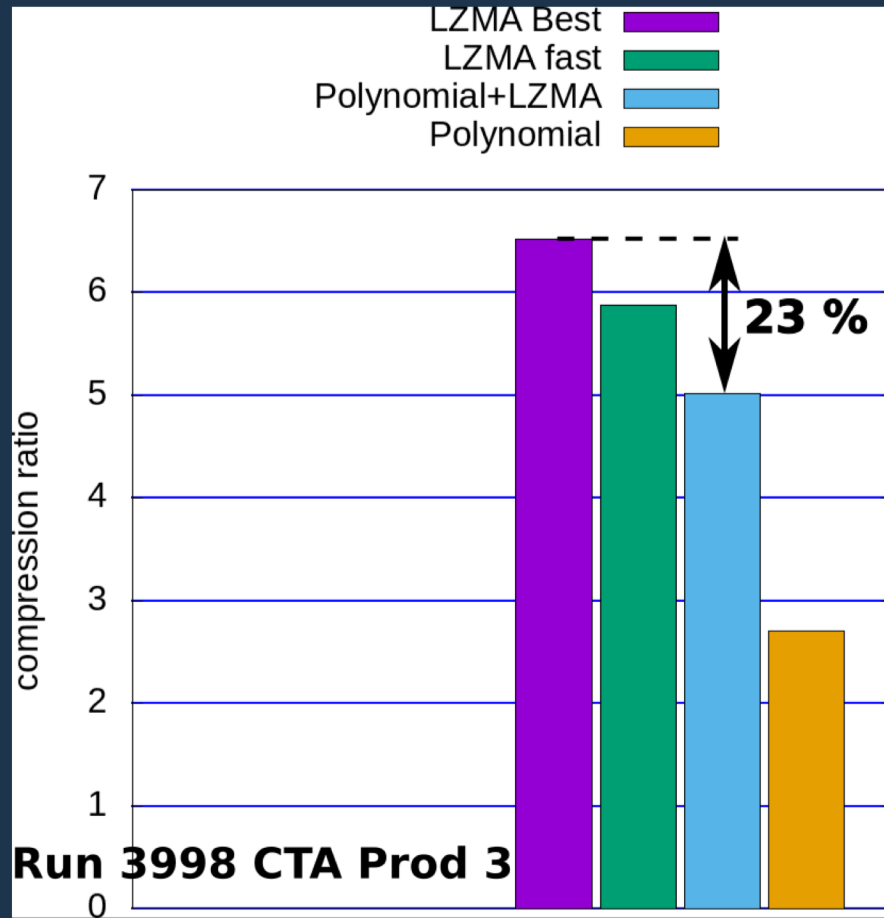












- Fast lossless compression method tested on CTA simulated data
- Integrated signal:
  - Polynomial + LZMA = LZMA compression ratio
  - 19x faster
- Video signal:
  - Polynomial + LZMA = 0.77 LZMA compression ratio
  - 25x faster
- Image per image compression
  - Vectorisable
  - Multi-thread
  - Relevant for digitalized signals
- Compression delivered as open-source library: <https://gitlab.in2p3.fr/CTA-LAPP/PLIBS> 8
- Published: Aubert et al, *Polynomial Data Compression for Large-Scale Physics Experiments*, Computing and Software for Big Science



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