Graph-based Task Scheduling on Heterogeneous Resources

Key4hep Collaboration

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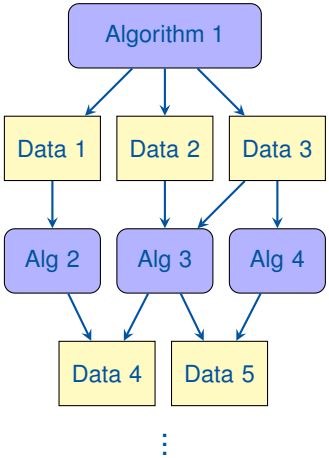
Key4hep who?

> *... The Key4hep project provides a flexible turnkey solution for the full experiment life-cycle based on established community tools such as ROOT, Geant4, DD4hep, Gaudi, podio and spack. Members of the CEPC, CLIC, EIC, FCC, and ILC communities have joined to develop this framework and have merged, or are in the progress of merging, their respective software environments into the Key4hep stack.*
>
> – INSPIRE-HEP

- Working with Mateusz Fila and Benedikt Hegner

Specifics: Directed Acyclic Graphs

- Scheduling graphs of many tasks with dependencies on an assortment of "workers."
- Classic computation problem: NP-hard!



R&D: Julia

- Proposed resolution to the dichotomy of C++ and Python
- Interest in a new package: Dagger.jl (as in DAG)
- Continuing from a previous student

Progress

- Algorithms aware of the graph state at schedule-time
- Data transfer between processes and algorithms
- Bug fixes and project structure!

Frankfurt

Bern