Acts Parallelization Meeting
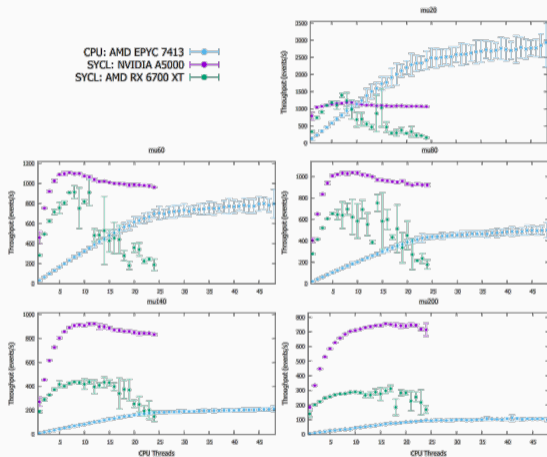
Stephen Nicholas Swatman

January 27, 2023

■ **Guilherme** presented some of our results at the ATLAS Software and Computing week this Wednesday!

Today's Contibutions

- *Kalman Filter Update in traccc* by **Beomki**
- *A Case For and an Implementation Of Composable CUDA Graph Algorithms* by **Stephen**

- **Created cell reader into collection of cells + collection of modules.** (PR#288)
  by @guilhermeAlmeida1, no assignee, merged on 2023-01-17
- **SYCL Eigen Fix, main branch (2023.01.20.)** (PR#305)
  by @krasznaa, no assignee, merged on 2023-01-20
- **Update detray to v0.17.0** (PR#306)
  by @beomki-yeo, no assignee, merged on 2023-01-24
- **Remove CCL partition data structure** (PR#308)
  by @stephenswat, no assignee, merged on 2023-01-25

acts-project/traccc: Open PRs 1

- **integrated nvtx tools with timer class** (PR#294)
  by @Xola101, ⚠ **no assignee**, updated on 2023-01-26

- **Alpaka first steps** (PR#300)
  by @StewMH, ⚠ **no assignee**, updated on 2023-01-26

- **Implement cell partitioning in CUDA** (PR#309)
  by @stephenswat, ⚠ **no assignee**, updated on 2023-01-26

- **ci: Add basic GPU CI** (PR#237)
  by @paulgessinger, ⚠ **no assignee**, updated on 2023-01-25

- **MPS benchmarking scripts and test workflow** (PR#244)
  by @Chamodya-ka, ⚠ **no assignee**, updated on 2023-01-25

- **Changed doublets & triplets data structure to spM based jagged vectors** (PR#252)
  by @guilhermeAlmeida1, ⚠ **no assignee**, updated on 2023-01-25

- **added mps script tests** (PR#255)
  by @Chamodya-ka, ⚠ **no assignee**, updated on 2023-01-25

acts-project/traccc: Open PRs II

- **GPU Track Fitting** (PR#296)
  by @beomki-yeo, ⚠ **no assignee**, updated on 2023-01-25

- **Changed device clusterization to flat edm** (PR#299)
  by @guilhermeAlmeida1, ⚠ **no assignee**, updated on 2023-01-25

- **Changed CPU clustering to use flat vectors of alt_cells as input and alt_measurements internally.** (PR#304)
  by @guilhermeAlmeida1, ⚠ **no assignee**, updated on 2023-01-25

- **Add infrastructure for CUDA graph algorithms** (PR#307)
  by @stephenswat, ⚠ **no assignee**, updated on 2023-01-25

- **Alternative CUDA implementation of seed finding** (PR#230)
  by @stephenswat, ⚠ **no assignee**, updated on 2023-01-11

- **Improve memory performance of CUDA CCA code** (PR#235)
  by @stephenswat, ⚠ **no assignee**, updated on 2023-01-11

acts-project/traccc: Open PRs III

- **Implement and test a CUDA version of the module map** (PR#154)
  by @stephenswat, ⚠ **no assignee**, updated on 2022-04-13

- **Implement CUDA spacepoint formation with flat EDM** (PR#158)
  by @stephenswat, ⚠ **no assignee**, updated on 2022-04-01

- **Rename unit test file** (PR#371)
  by @beomki-yeo, no assignee, merged on 2023-01-19

- **Remove implicit int type conversion** (PR#373)
  by @beomki-yeo, no assignee, merged on 2023-01-24

- **fix: static_cast step direction to avoid compiler warning** (PR#375)
  by @niermann999, no assignee, merged on 2023-01-24

- **Add SYCL Test** (PR#369)
  by @beomki-yeo, no assignee, merged on 2023-01-24

acts-project/detray: Open PRs I

- 🔀 **chore: add mathematical constants and clean up some float conversions** (PR#372)
  by @niermann999, ⚠️ **no assignee**, updated on 2023-01-25

- 🔀 **ref: move surface vector into sf finder store** (PR#367)
  by @niermann999, ⚠️ **no assignee**, updated on 2023-01-23

- 🔀 **feat: cylinder portal intersector** (PR#370)
  by @niermann999, ⚠️ **no assignee**, updated on 2023-01-19

- 🔀 **feat: material builders** (PR#364)
  by @niermann999, ⚠️ **no assignee**, updated on 2023-01-17

- 🔀 **feat: surface barcode** (PR#368)
  by @niermann999, ⚠️ **no assignee**, updated on 2023-01-12

- 🔀 **ref: Add new stepper policy and benchmark it** (PR#327)
  by @niermann999, ⚠️ **no assignee**, updated on 2022-11-10

- 🔀 **Volume radiation length** (PR#328)
  by @beomki-yeo, ⚠️ **no assignee**, updated on 2022-10-26

- **add vecpar example** (PR#235)
  by @georgi-mania, ⚠ **no assignee**, updated on 2022-07-13

- ⎇ **Doxygen Documentation Generation, main branch (2023.01.17.)** (PR#212)
  by @krasznaa, no assignee, merged on 2023-01-17

- ⎇ **GitHub Doxygen Pages, main branch (2023.01.17.)** (PR#213)
  by @krasznaa, no assignee, merged on 2023-01-17

- ⎇ **Doxygen Namespace Fixes, main branch (2023.01.17.)** (PR#214)
  by @krasznaa, no assignee, merged on 2023-01-18

- **[WIP] Add cms caching cuda allocator** (PR#79)
  by @cgleggett, ⚠ **no assignee**, updated on 2021-04-28

- **Eigen getter size type template parameter** (PR#85)
  by @beomki-yeo, no assignee, merged on 2023-01-24

- **Added Fastor as a full backend and frontend.** (PR#78)
  by @wermos, ⚠ **no assignee**, updated on 2022-11-21