McStas McXtrace

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OpenACC More Science, Less Programming

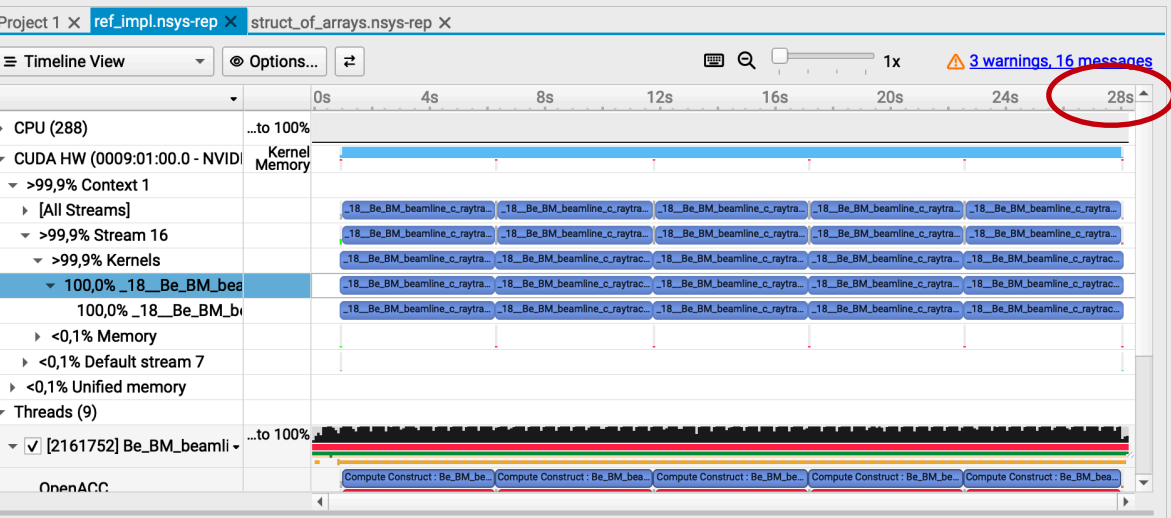
OPEN HACKATHONS

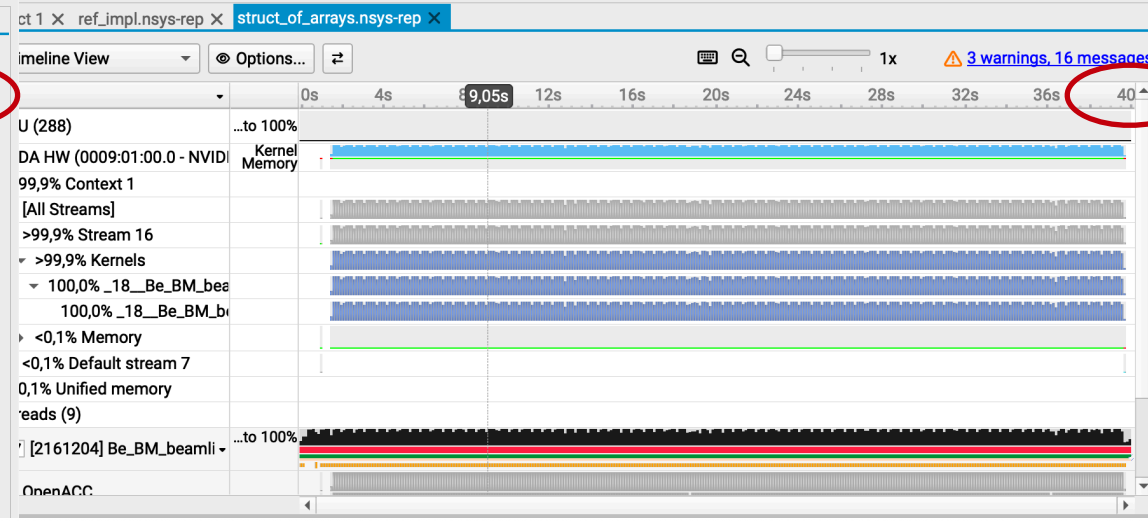
Profiler Output

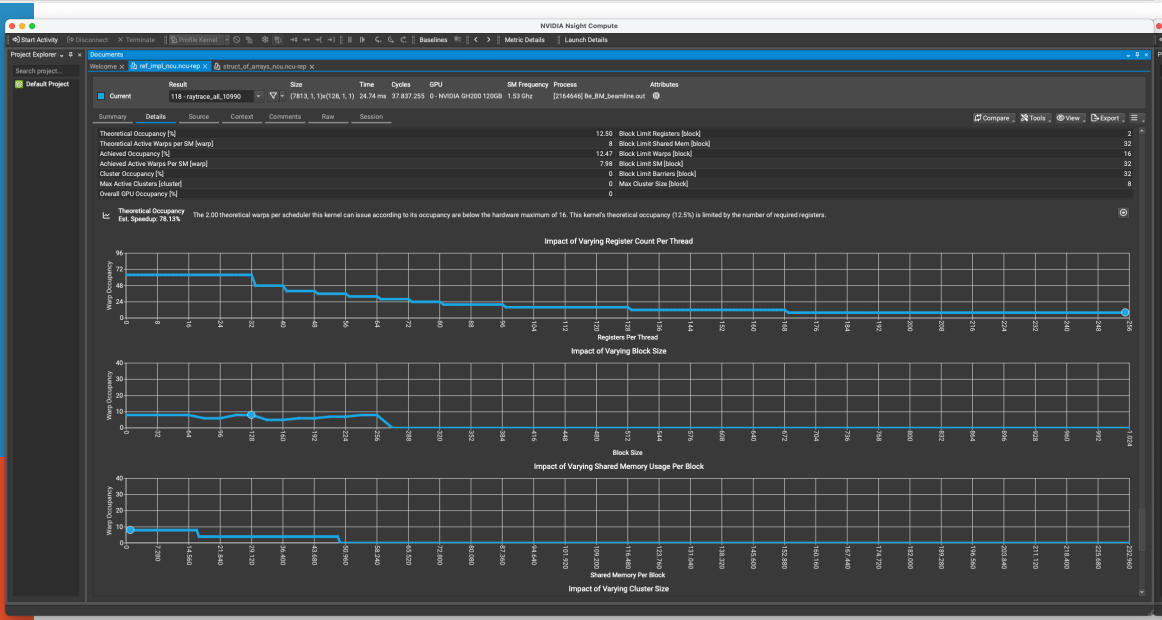
After **restructure** cogen “arrays of struct” -> “struct with arrays”.

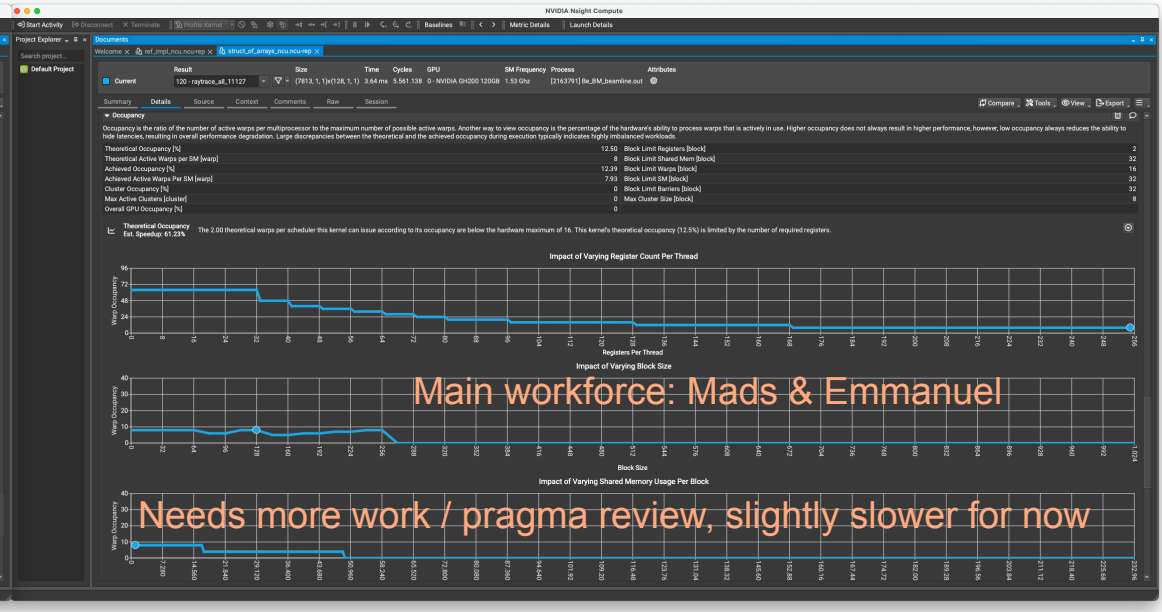
“Reference” / monolithic kernel - 1e10 / 5 launches x2e9

“Struct of arrays” / monolithic kernel - 1e10 / 10k launches x1e6





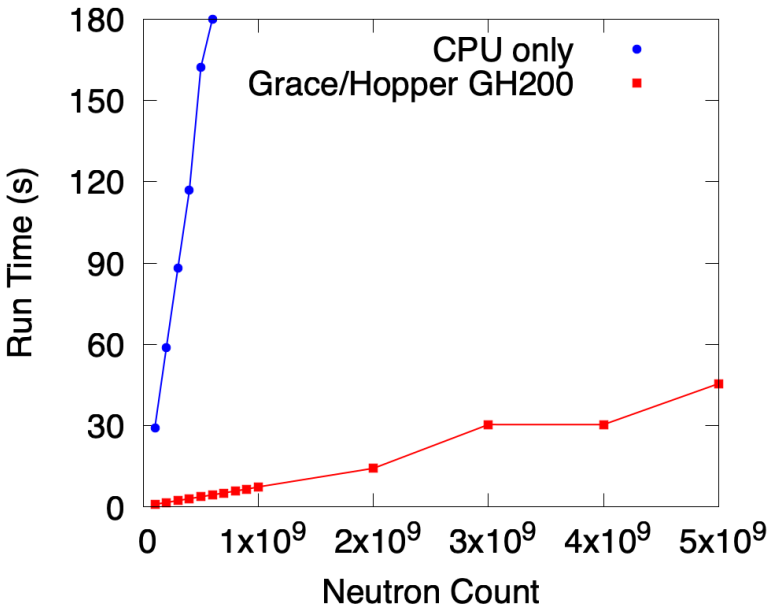




Other progress

Other news

- Tobias: more work on specific instr/problem
  TAS resolution, fully functional and good performance



- José: work understanding and readability of 'sorting algorithm' for FUNNEL mode. No measurable diff. yet.

- Peter: solution to avoid dev->host copy. No measurable difference

```
Finally [ILL_H5_new: ILL_H5_new_20250409_172438]. Time: 1.96667 [min]
INFO: Placing instr file copy ILL_H5_new.instr in dataset ILL_H5_new_20250409_172438
INFO: Placing generated c-code copy ILL_H5_new.c in dataset ILL_H5_new_20250409_172438

real    1m58.811s
user    2m2.843s
sys     0m0.502s
(base) /tmp/ILL_H5/ILL_H5_new/hack
```

```
Finally [ILL_H5_new: ILL_H5_new_20250409_170407]. Time: 1.96667 [min]
INFO: Placing instr file copy ILL_H5_new.instr in dataset ILL_H5_new_20250409_170407
INFO: Placing generated c-code copy ILL_H5_new.c in dataset ILL_H5_new_20250409_170407

real    1m58.960s
user    2m2.945s
sys     0m0.504s
(base) /tmp/ILL_H5/ILL_H5_new
```

Goals

- Goals for today:
  - More profiling / tuning of new structure layout
  - Funnel-implementation for the new structure layout
  - Benchmarking / critical look at ‘general vectorisation’ of CPU side code
  - Closer look at specific hkl_search function in Single_crystal case
  - Experiment with sort algorithm / try with thrust solution?

Problems and Solutions

- Success restructuring code quickly but no speedup in sight
  - Actual issue hiding somewhere else?