

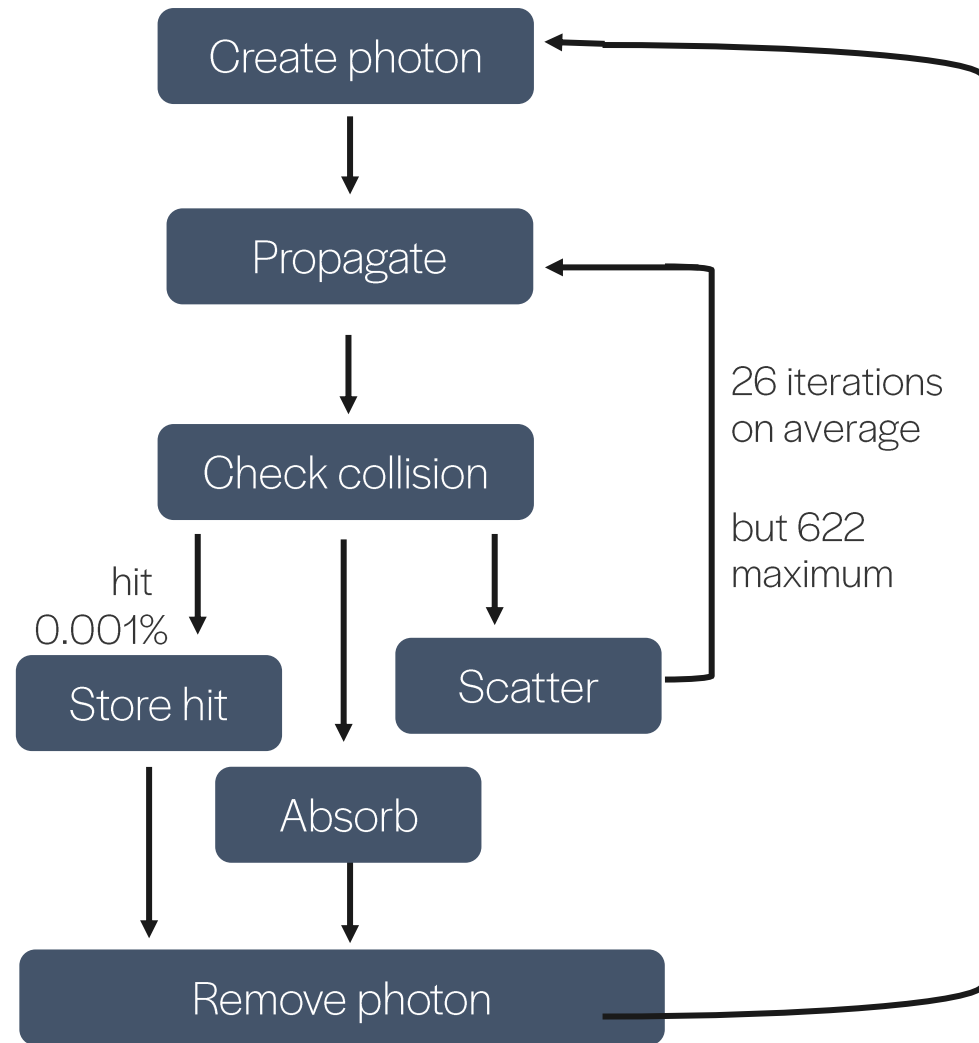
OptiXs

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Photon Propagation Workshop
Oct. 19, 2021

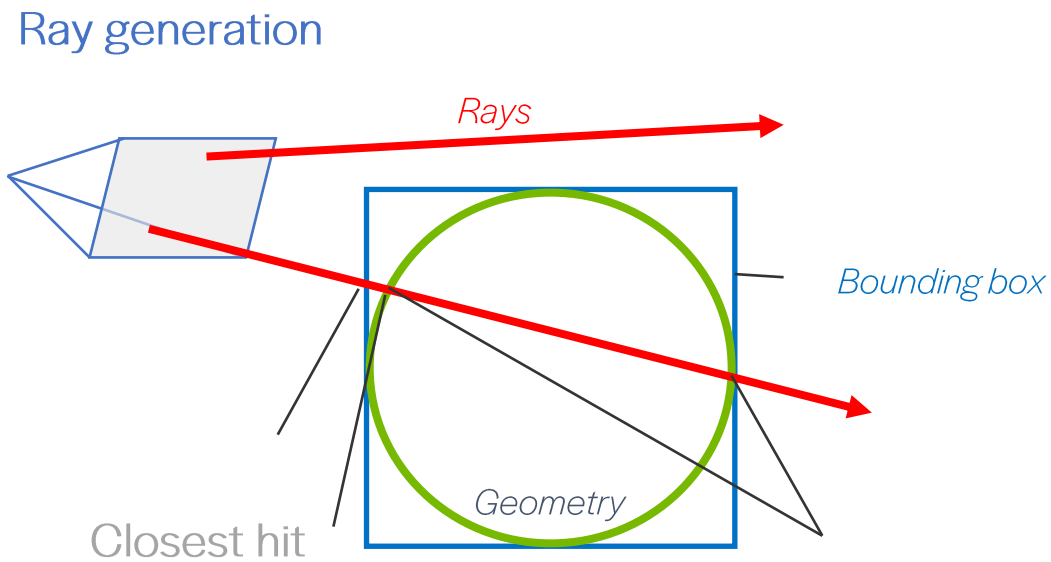


Photon Propagation in CLSim and PPC

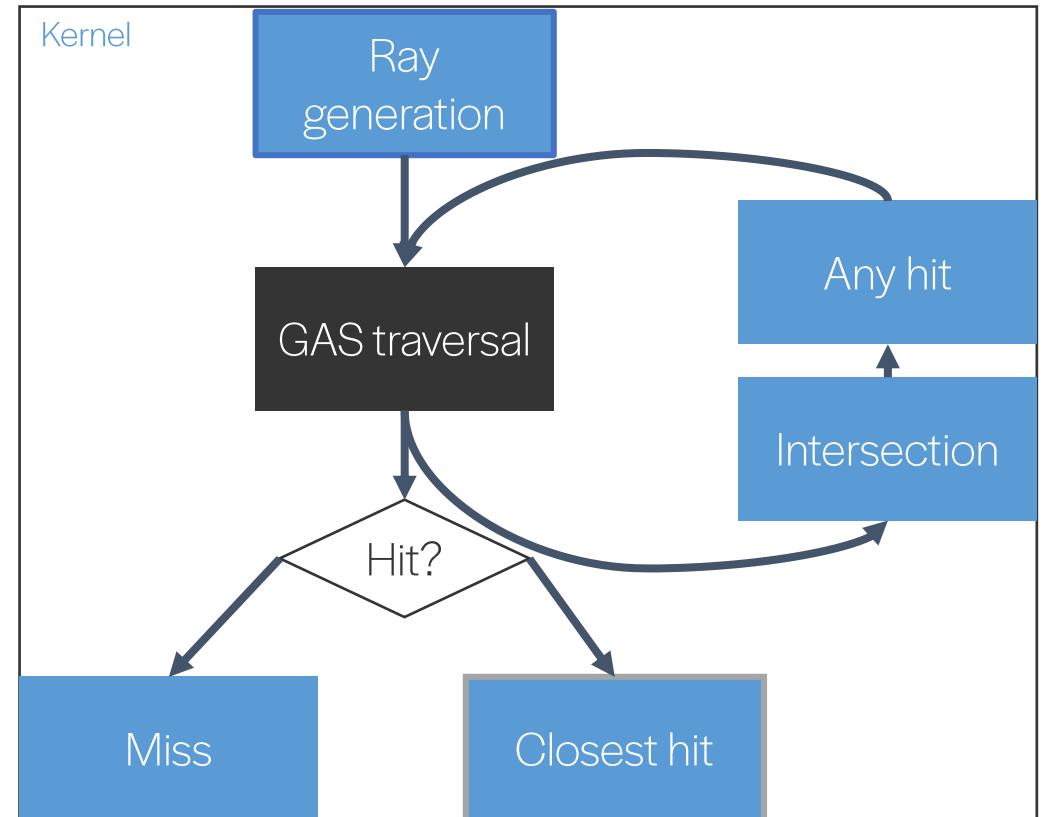


How OptiXs works

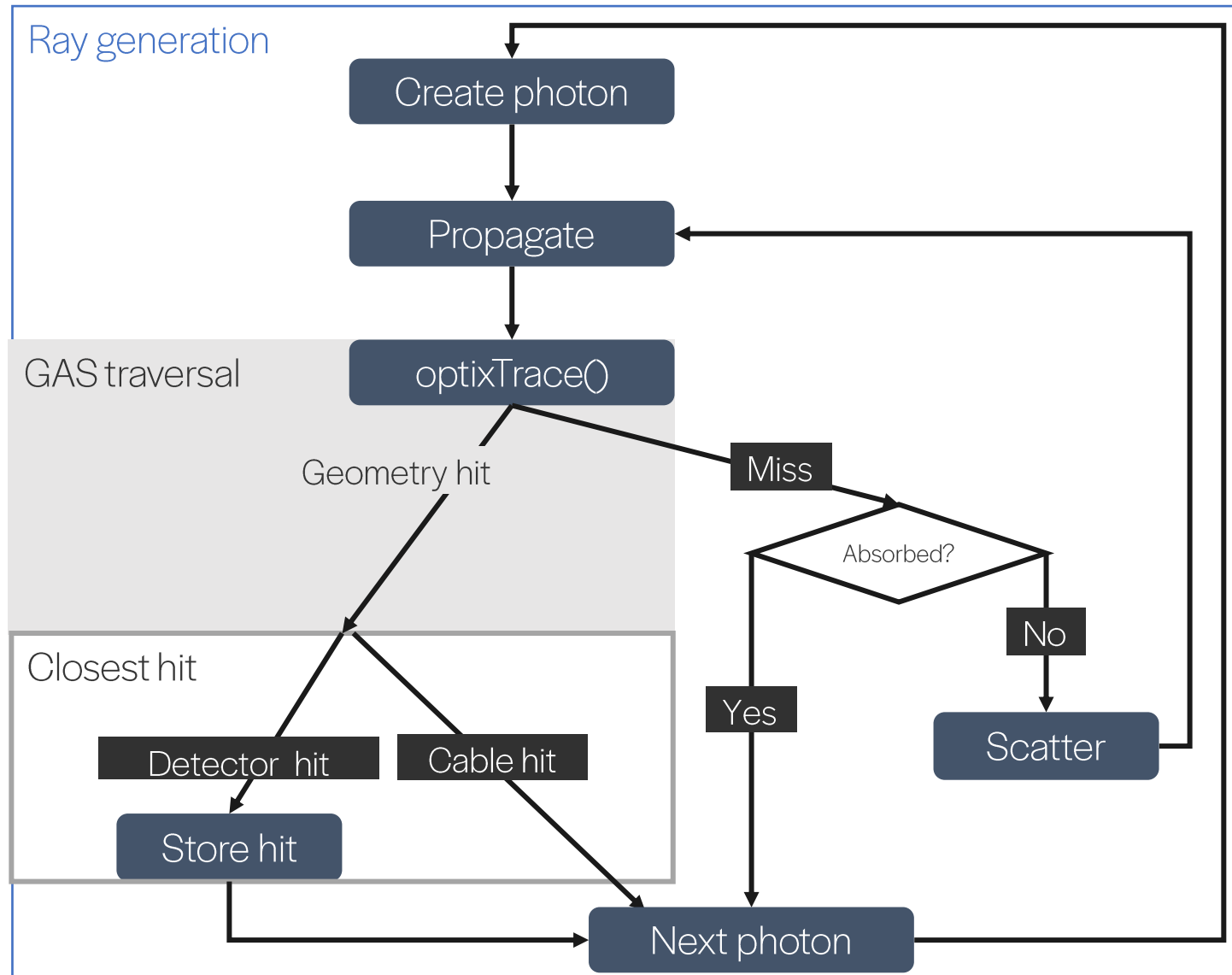
Ray tracing components



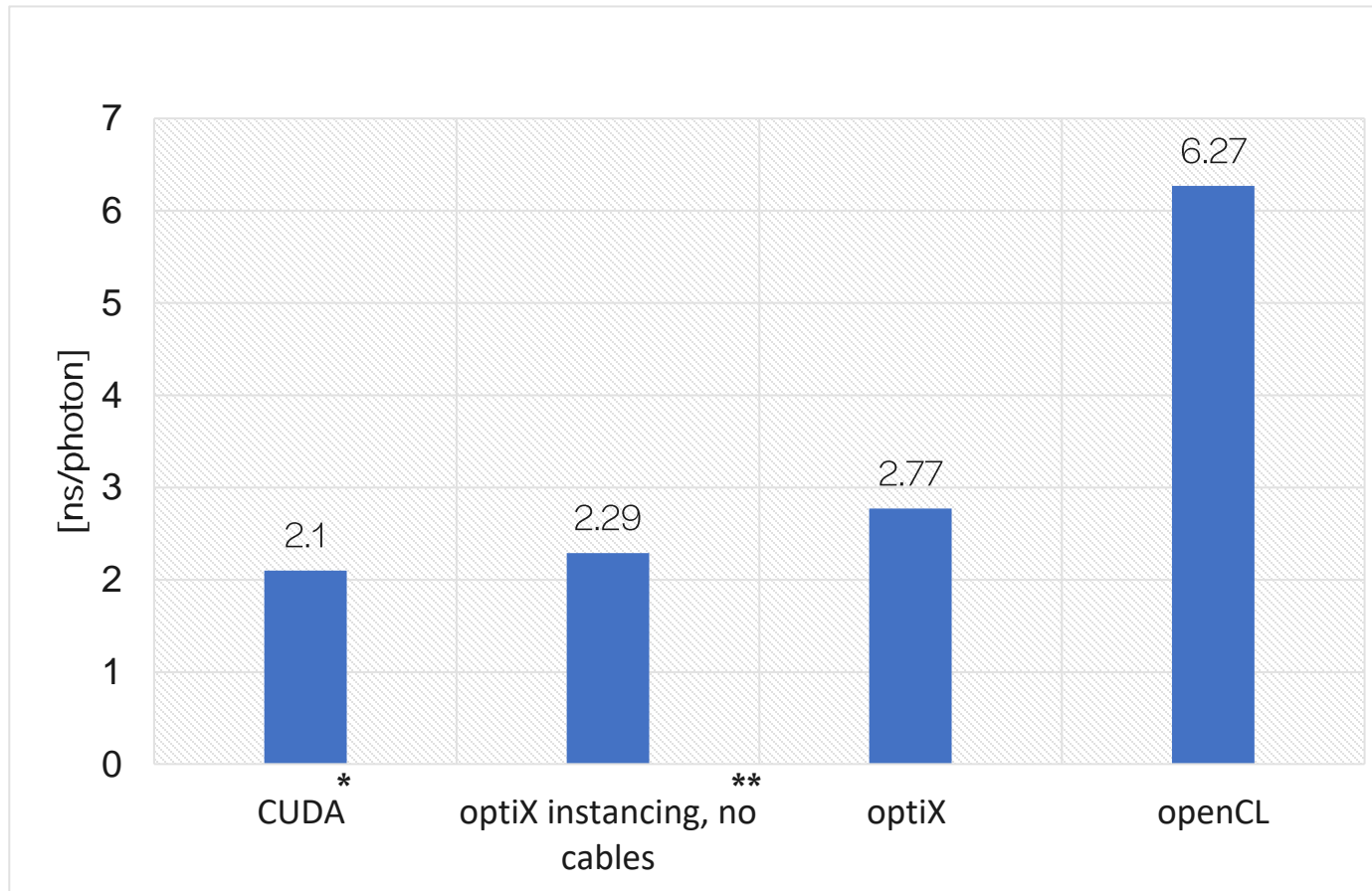
OptiX execution model



Collision Detection in OptiXs

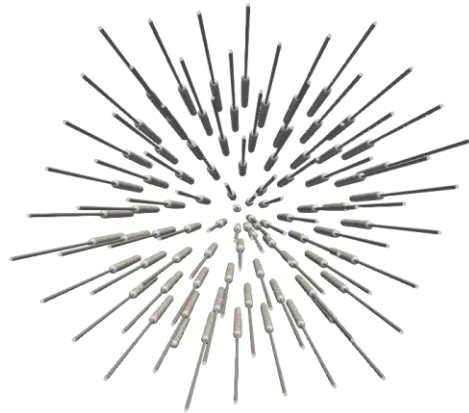


Kernel runtime – RTX A6000

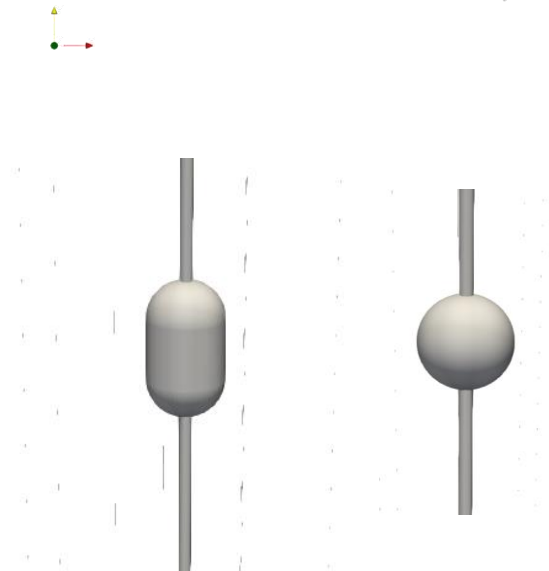


*Version from June, ** fresh results (treat with caution)

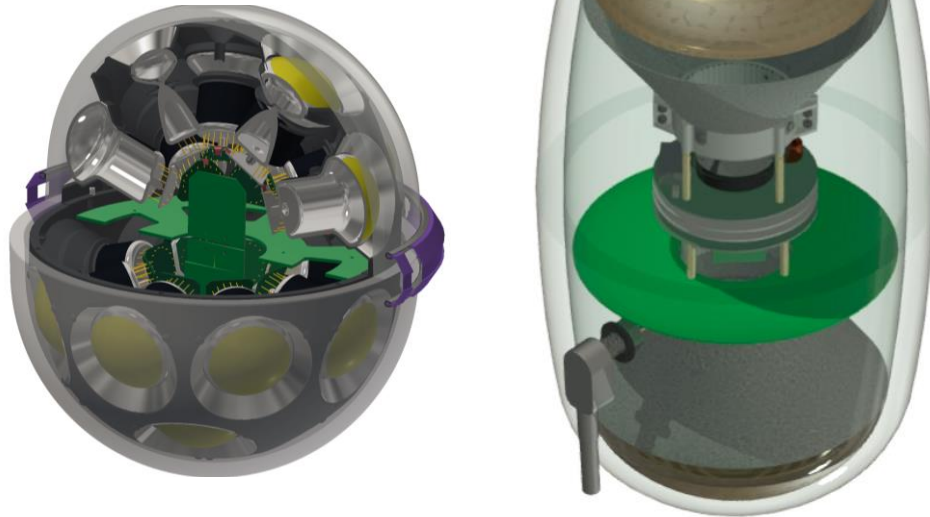
Why OptiXs



- Flexibility
- Fast paced iterations on
 - Geometry
 - Photo-detector shapes
 - Cable position
- Cross-checks with existing simulation
- CAD file -> detector geometry in minutes



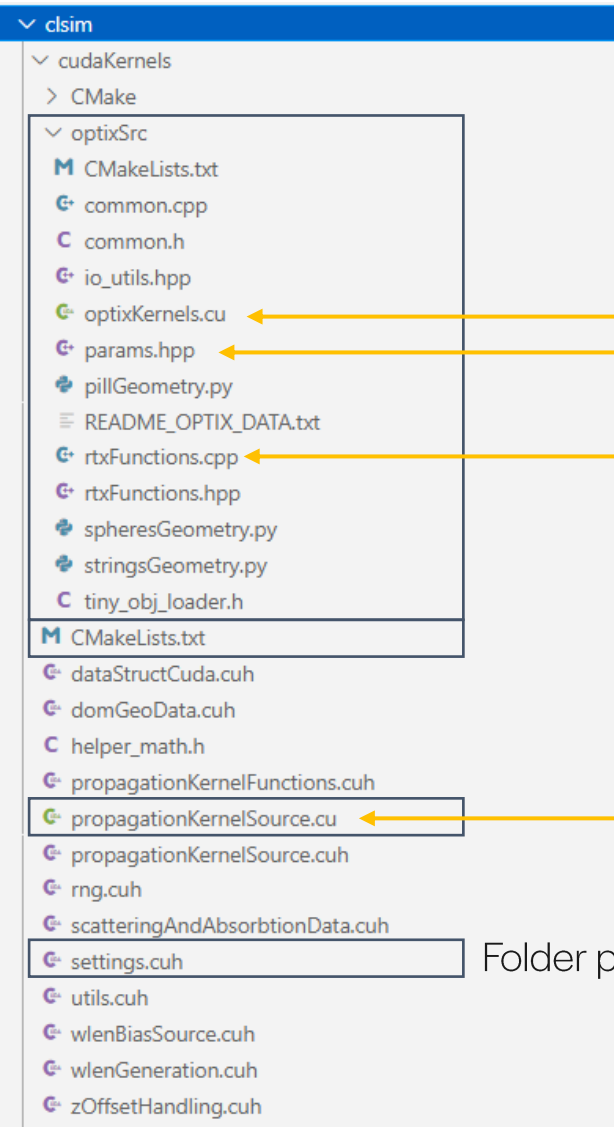
Why OptiXs



- Non-expert was able to implement a whole detector with
 - dEgg
 - mDOM
 - Cables

Model	#Triangles	Detector	Cable	Total	[ms]
Sphere detectors	9'907'200	42'099	0	42'099	575
Sphere detectors, cables	9'926'640	40'978	132'209	173'187	575
Pill detectors	12'291'120	61'437	0	61'437	570
Pill detectors, cables	12'310'560	60'250	128'797	189'047	575

File Overview



optiX programs, CH and RG

Data struct handed to RG

Data holder for optiX

Still in same `launch_CUDAPropogate` function:

- Creation of `RTXDataHolder`
- Reading `obj` files
- Memory allocations and `optiX` Parameters
- `optiXLaunch` call w/ time measurements

Folder paths

Thank you!

Questions?