

Porting PHOENIX to FPGAs with StencilStream

Master Thesis

At a glance

- extend PHOENIX with the help of StencilStream to FPGAs and model/analyze the performance

We have recently implemented PHOENIX as a CPU- and GPU optimized simulation framework in a collaboration with the group of Prof. Dr. Schumacher (Theory of functional Photonic Structures, Paderborn University). The StencilStream framework developed by us targets the same class of simulation problem (stencil problems) and, thus, the task of this thesis is to extend PHOENIX with the help of StencilStream to FPGAs and model/analyze the performance.

- No knowledge of physics is required.
- Prior knowledge of FPGA programming is not required but helpful.

Further reading:

- PHOENIX:
 - <https://github.com/Schumacher-Group-UPB/PHOENIX>
 - <https://arxiv.org/abs/2411.18341>
- StencilStream:
 - <https://doi.org/10.1109/FPL64840.2024.00023>
 - <https://github.com/pc2/StencilStream>

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