



Additional AMD Training Materials

**Presenter: Bob Robey
AMD @ Tsukuba
Oct 21-23, 2025**

AMD 
together we advance_

Lots of different resources on AMD Hardware and Software

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1. Training Offerings
 2. Lab-notes (short technical articles)
 3. Videos from EPCC
 4. Videos and Slides from 2024 HLRS
 5. Videos and Slides from OLCF
 6. Books

Training Offerings -- HPC and AI Training Events

We typically offer the following training types.

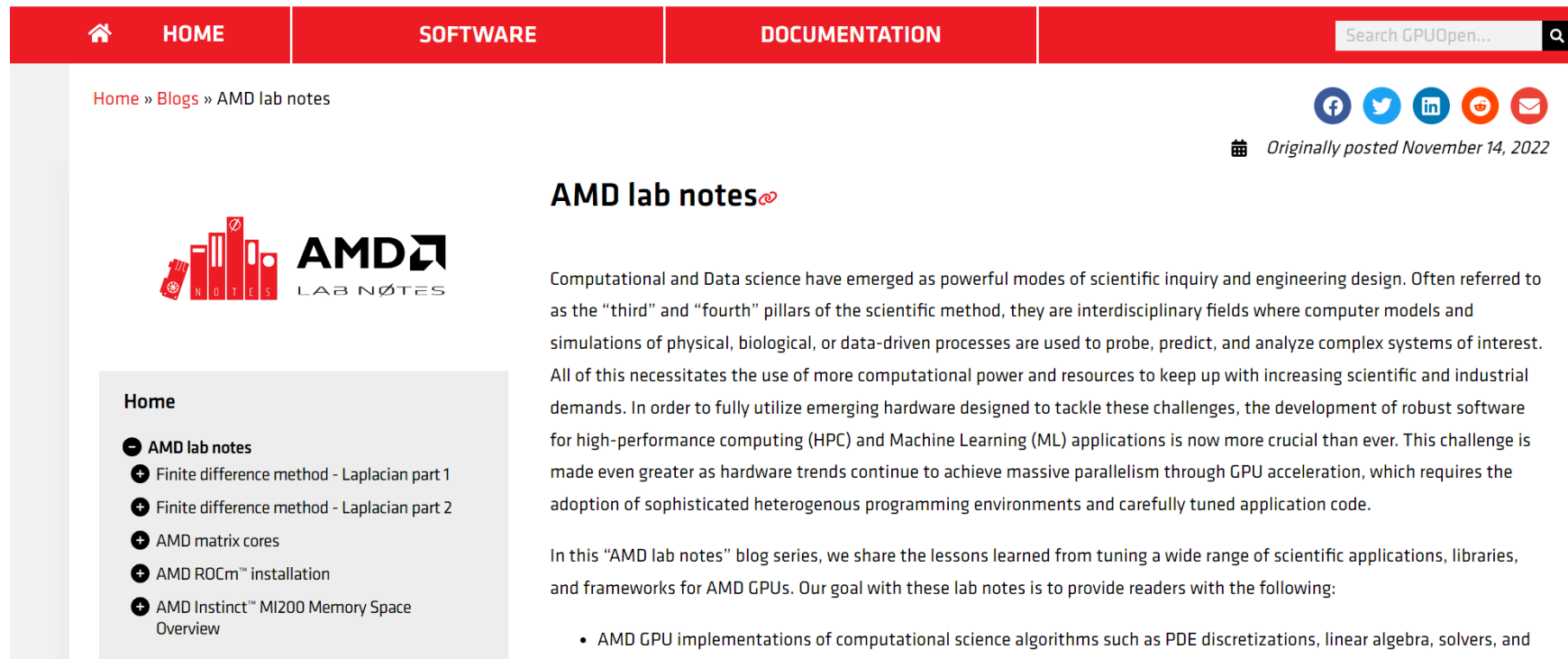
- **System Administration Introduction** – 1-2 hours for key staff at a site
 - Model installation repo, useful for application developers as well: <https://github.com/amd/HPCTrainingDock>
- **Training Workshop** – generally around 4 half-days virtual workshop with hands-on exercises. Up to 90 participants.
- **Hackathon** – typically a 3 full-day on-site event for around 8 teams. Often there is a pre-hackathon virtual workshop the week before the event to get teams ready for hackathon
- **Hackathons** are generally scheduled **six months after a Training Workshop** to allow applications some time to get on the system and work through their initial porting efforts.
- **Training events are customized** to the typical workloads and applications that are run at each site.

Contact for more training and outreach support

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AMD lab notes and ROCm blogs

<https://gpuopen.com/learn/amd-lab-notes>,
<https://rocm.blogs.amd.com/index.html>



Technical blog post series covering:

- Lessons learned from tuning a wide range of applications, libraries, and frameworks
- Implementations of computational science algorithms such as PDE discretizations, linear algebra, solvers, and more
- Instructions, guidance, and references on using libraries and tools from the ROCm software stack
- Best practices for porting and optimizing both HPC and AI applications
- Monthly release cadence

GitHub repository: <https://github.com/AMD/amd-lab-notes>

Courtesy: Justin Chang, AMD

List of Lab-notes and Blogs

[AMD matrix cores](#)

[Finite difference method - Laplacian part 1](#)

[Finite difference method - Laplacian part 2](#)

[Finite difference method - Laplacian part 3](#)

[Finite difference method - Laplacian part 4](#)

[Introduction to profiling tools for AMD hardware](#)

[AMD ROCm™ installation](#)

[AMD Instinct™ MI200 GPU memory space overview](#)

[Register pressure in AMD CDNA™2 GPUs](#)

[GPU-aware MPI with ROCm](#)

[Jacobi Solver with HIP and OpenMP offloading](#)

[Sparse matrix vector multiplication - part 1](#)

[Affinity part 1 - Affinity, placement, and order](#)

[Affinity part 2 - System topology and controlling affinity](#)

[C++17 parallel algorithms and HIPSTDPAR](#)

[Application portability with HIP](#)

[Reading AMD GPU ISA](#)

[MI300A - Exploring the APU advantage](#)

[Seismic stencil codes - part 1](#)

[Seismic stencil codes - part 2](#)

[Seismic stencil codes - part 3](#)

[Creating a PyTorch/TensorFlow code environment on AMD GPUs](#)

[Introducing AMD's Next-Gen Fortran Compiler](#)

[Graph analytics on AMD GPUs using Gunrock](#)

[Introducing ROCprofiler SDK - The Latest Toolkit for Performance Profiling](#)

Videos from EPCC

- Video recordings for this event are already available on YouTube:
<https://www.youtube.com/playlist?list=PLB4tvLCynFjQq2rOljEy39lDaugXcFPNa>

The image shows a YouTube playlist interface. On the left is a large vertical thumbnail for the playlist titled "ARCHER2 Accelerating your Applications with ...". The thumbnail includes the EPCC logo, the ARCHER2 logo, and the University of Edinburgh logo. Below the title, it says "ARCHER2 HPC" and "Playlist • 3 videos • No views". At the bottom of the thumbnail are buttons for "Play all", a bookmark icon, a share icon, and a menu icon.

To the right of the thumbnail is a list of three videos:

1. **ARCHER2 Training: Accelerating your Applications with AMD GPUs (day 1)**
Accelerating your Applications with AMD GPUs
Session 1
epcc | archer2 | 2:48:33
ARCHER2 HPC • 31 views • 2 days ago
2. **ARCHER2 Training: Accelerating your Applications with AMD GPUs (day 2)**
Accelerating your Applications with AMD GPUs
Session 2
epcc | archer2 | 2:13:30
ARCHER2 HPC • 13 views • 1 day ago
3. **ARCHER2 Training: Accelerating your Applications with AMD GPUs (day 3)**
Accelerating your Applications with AMD GPUs
Session 3
epcc | archer2 | 2:33:59
ARCHER2 HPC • 7 views • 3 hours ago

Videos and Slides from 2024 and 2025 HLRS

- **April 2024** High-Performance Computing Center Stuttgart (HLRS) Stuttgart <https://fs.hlrs.de/projects/par/events/2024/GPU-AMD/>
- **May 2025** High-Performance Computing Center Stuttgart (HLRS) Stuttgart <https://fs.hlrs.de/projects/par/events/2025/GPU-AMD/>

AMD Instinct™ GPU Training

Materials for this course



Day 1

- 01. AMD Presentation Roadmap.pdf
— [Slides](#), [Recording*](#)
- 02. Overview of Programming Model for MI200 and MI300 Series
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 03. Introduction to OpenMP® Offload on AMD GPUs
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 04. Real-World OpenMP® Language Constructs
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 05. Advanced OpenMP®
— [Slides](#), [Recording](#), [QA](#)

Day 2

- 06. Introduction to Programming GPUs with HIP
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 07. Porting Applications to HIP
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 08. Optimizing HIP Applications
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 09. Hip and OpenMP® Interoperability
— [Slides](#), [Recording](#), [QA & Exercises](#)

Day 3

- 10. Kokkos and Performance Portable Languages
— [Slides](#), [Recording](#), [QA & Exercises](#), [QA](#)
- 11. C++ Standard Parallelism on AMD GPUs
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 12. GPU-Aware MPI with ROCm™
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 13. ML and AI on AMD GPUs
— [Slides](#), [Recording](#), [QA & Exercises](#)

Day 4

- 14. AMD Debugger: ROCgdb
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 15. GPU Profiling - Performance Timelines
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 16. Kernel Profiling with Omnipert
— [Slides](#), [Recording](#), [QA & Exercises](#)
- 17. Additional AMD Training Materials
— [Slides](#), [Recording](#)

Documentation

- [ROCm Documentation](#)
- [ROCm Blogs \(search for HPC tag\)](#)
- [GPUOpen AMD lab notes](#)

Exercises and updates

- [Exercise document \(updates for Omnipert\) pdf](#)
- [Launch Parameter Tuning \(pdf\)](#)
- [LDS Occupancy Limiter \(pdf\)](#)
- [Register Occupancy Limiter \(pdf\)](#)
- [Strided Data Access Patterns \(pdf\)](#)
- [Algorithmic Optimizations \(pdf\)](#)

Additional slides

- [Affinity](#)
- [AMD Matrix Cores](#)
- [OpenMP with Fortran, and OpenACC](#)

Videos – Oak Ridge Leadership Computing Facility (OLCF) Training Archives

Search “**AMD**” in this webpage to find the **latest** talks: https://docs.olcf.ornl.gov/training/training_archive.html

2023-02-17	GPU Profiling	Alessandro Fanfarillo	Frontier Training Workshop	(slides recording)
2023-02-15	EPYC CPU and Instinct GPU	Nick Malaya, AMD	Frontier Training Workshop	(slides recording)
2022-10-11	Hierarchical Roofline Profiling on AMD GPUs	Noah Wolfe (AMD) and Xiaomin Lu (AMD)	Special Session	(slides recording)
2022-08-23	Understanding GPU Register Pressure	Alessandro Fanfarillo (AMD)	Special Session	(slides recording)
2021-05-26	ROCgdb and HIP Math Libraries	Justin Chang (AMD)	HIP Training Workshop	(slides exercises recording)
2021-05-25	Converting CUDA Codes to HIP	Julio Maia (AMD)	HIP Training Workshop	(slides exercises recording)
2021-05-24	Introduction to GPU Programming	Gina Sitaraman (AMD)	HIP Training Workshop	(slides exercises recording)
2021-05-20	MI100 GPU	Nick Malaya (AMD)	Spock Training	(slides recording)
2021-05-20	State of HIP	Nick Malaya (AMD)	Spock Training	(slides recording)
2021-05-20	Node-Level Profiling	Julio Maia (AMD)	Spock Training	(slides recording)
2019-09-06	Intro to AMD GPU Programming with HIP	Damon McDougall, Chip Freitag, Joe Greathouse, Nicholas Malaya, Noah Wolfe, Noel Chalmers, Scott Moe, Rene van Oostrum, Nick Curtis (AMD)	Intro to AMD GPU Programming with HIP	(slides recording)

Videos – continued

- ENCCS recorded our training sessions from our workshop for them at the end of November 2023. The full set of training materials is at the ENCCS (Euro National Competence Centre Sweden) including exercises, slides and videos -- <https://enccs.github.io/amd-rocm-development>
 - [Introduction to HIP Programming](#)
 - [Porting Applications to HIP](#)
 - [Getting Started with OpenMP® Offload Applications on AMD Accelerators](#)
 - [Developing Fortran Applications: HIPFort, OpenMP®, and OpenACC](#)
 - [Exercises](#)
 - [Architecture](#)
 - [GPU-Aware MPI with ROCm™](#)
 - [AMD Node Memory Model](#)
 - [Hierarchical Roofline on AMD Instinct™ MI200 GPUs](#)
 - [Affinity – Placement, Ordering and Binding](#)
 - [Profiling and debugging](#)
 - [OpenMP® Offload Programming](#)
 - [Introduction to ML Frameworks](#)
 - [Summary and outlook](#)

AMD software documentation

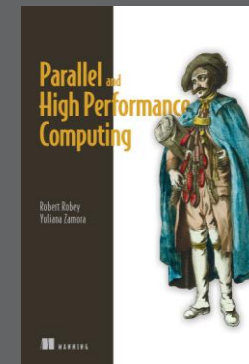
- ROCm documentation site is often the first resource (<https://rocm.docs.amd.com>)
- AMD Developer Site – <https://amd.com/developer>
 - Developer Site Videos: <https://www.amd.com/en/developer/resources/rocm-hub/training-videos.html>
- There is also now a book on HIP programming <https://www.barnesandnoble.com/w/accelerated-computing-with-hip-yifan-sun/1142866934>
- Oak Ridge National Laboratory has some excellent materials they have created from our briefings and their excellent staff:
 - [Crusher quick-start guide](#)
 - [Frontier user guide](#)

Accelerated Computing with HIP – out of AMD Education Outreach group.

New OpenMP® GPU Programming book – **Programming Your GPU with OpenMP**, Tom Deakin and Tim Mattson
(2023) <https://www.amazon.com/Programming-Your-GPU-OpenMP-Performance/dp/0262547538/>

The best broad cover of parallel and high performance computing topics is the book **Parallel and High Performance Computing**, Manning Publications, by Robert Robey and Yuliana Zamora.

At <https://www.manning.com/books/parallel-and-high-performance-computing>



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