



**IMPACT
2024**

14th International
Workshop on
Polyhedral Compilation Techniques
January 17, 2024 | Munich, Germany

10:00 – 11:00 Keynote

Scalable Polyhedral Compilation in Open-Source and AI Compilers - **Tobias Grosser** (University of Cambridge)

11:00 - 11:30 Break

11:30 - 12:30 Session 1: Polyhedral Foundation

- *A Polyhedral Compilation Library with Explicit Disequality Constraints* - **Sven Verdoolaege**
- *Easy Counting and Ranking for Simple Loops* - **Alain Ketterlin**

12:30 - 12:50 Session 2: Affine Transformations

- *Reuse Analysis via Affine Factorization* - **Ryan Job**, Sanjay Rajopadhye

13:00 - 14:00 Lunch

14:00 - 15:30 Session 3: Code Generation Techniques

- *ParameTrick: Coefficient Generalization for Faster Polyhedral Scheduling* - **Gianpietro Consolaro**, H. Razanajato, N. Lossing, D. Barthou, Z. Zhang, C. Ancourt, C. Bastoul
- *Polyhedra at Work: Automatic Generation of VHDL Code for the Sherman-Morrison Formula* - **Patrice Quinton**, J. Poupart, M. Lemaire, D. Massicotte, S. Rajopadhye
- *Employing polyhedral methods to optimize stencils on FPGAs with stencil-specific caches, data reuse, and wide data bursts* - **Florian Mayer**, J. Brandner, M. Philippsen

15:30 - 16:00 Break

16:00 - 17:10 Session 4: Code Optimization

- *An Irredundant Decomposition of Data Flow with Affine Dependences* - **Corentin Ferry**, Steven Derrien and Sanjay Rajopadhye
- *Recover Polyhedral Transformations From Polyhedral Scheduler* - **Nelson Lossing**, W. Astaoui, G. Consolaro, H. Razanajato, Z. Zhang, D. Barthou
- *Algebraic Tiling facing Loop Skewing* - **Clément Rossetti**, A. Hamon and P. Clauss

17:10 - 17:20 Community news and closing notes

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Organizers

Workshop Chair

- Corinne Ancourt
MINES Paris - PSL University, France
- Jie Zhao
Renmin University of China, China

Program Committee

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New York University, UAE
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Cerebras Systems, Belgium

Reviewers

- Corinne Ancourt, Riyadh Baghdadi, Cédric Bastoul, George Bisbast, Jeronimo Castrillon, Lorenzo Chelini, Albert Cohen, Tobias Grosser, Paul Kelly, Andreas Kloeckner, Michael Kruse, Benoit Meister, Harenome Razanajato, Maxime Schmit, Edward Stow, Claude Tadonki, Ramakrishna Upadrasta, Sven Verdoolaege, Filip Wojcicki, Jie Zhao



Tobias Grosser

Scalable Polyhedral Compilation in Open-Source and AI Compilers

Tobias Grosser is an Associate Professor at the University of Cambridge and an advocate for open-source-first research. Tobias co-founded the Polyhedral loop optimization framework Polly, the FPL Presburger Library for MLIR, the LLHD/CIRCT hardware-design compiler, and is regularly teaching compiler design using the Python-Native xDSL compiler project designed to lower the barrier of entry into the LLVM ecosystem. Tobias worked as a Google PhD Fellow at ENS Paris, an SNSF Ambizione Fellow at ETH Zurich, and a Reader at the University of Edinburgh. He supervises several PhD students who actively contribute to the open-source compiler ecosystem.