



FLANG UPDATE

Steve Scalpone, LLVM Developers' Meeting, October 23, 2024

FLANG

- ▶ Flang started as a multi-year collaboration between the NNSA labs and NVIDIA
 - ▶ Open-source Fortran compiler since May 2017
 - ▶ Kicked off with support from the NNSA labs and the DOE ECP
 - ▶ And supported by many more people, individuals and organizations
- ▶ Flang is an LLVM subproject
 - ▶ Flang was accepted as an LLVM subproject in 2019
 - ▶ The source code was added to the monorepo in 2020, led by Arm
 - ▶ Today, over 225K lines of code, tests, and documentation in `llvm-project/flang`

FLANG

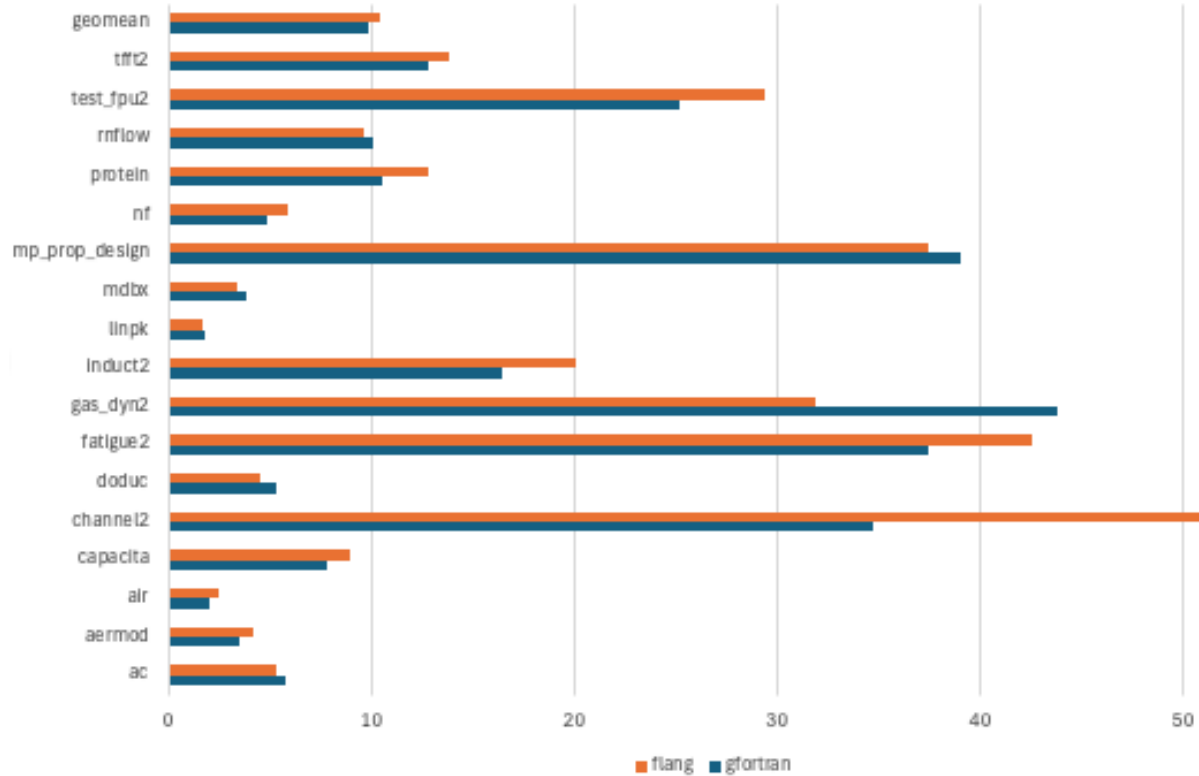
Recent News

- ▶ “flang” driver is available in LLVM 20 now!
 - ▶ Able to compile and execute large and complex applications
 - ▶ Compile-time and runtime performance is reasonable and improving
- ▶ Active project - over the past three months...
 - ▶ 262 commits merged by NVIDIA contributors
 - ▶ 272 commits by 67 contributors not from NVIDIA; 232 mention [flang]
- ▶ Test suites
 - ▶ LLVM test-suite has the capability to run the gfortran test suite
 - ▶ Fujitsu and IBM have made available their incredible test suites

FLANG

Performance

Polyhedron Benchmarks - Lower is Better



FLANG

What happening?

- ▶ CPU performance improvements!
- ▶ OpenMP multicore making good progress!
- ▶ OpenMP GPU offload is making good progress!
- ▶ CUDA Fortran underway and OpenACC will follow soon

THE FLANG PROJECT

SOURCE CODE

<https://github.com/llvm/llvm-project/tree/main/flang>

DISCOURSE

<https://discourse.llvm.org/c/subprojects/flang>

PROJECT CALL

Every other Wednesday 8:30am Pacific Time
<https://flang.llvm.org/docs/GettingInvolved.html>

TECHNICAL CALL

Every other Monday 8:30 Pacific Time
<https://flang.llvm.org/docs/GettingInvolved.html>