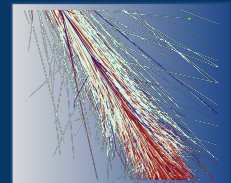
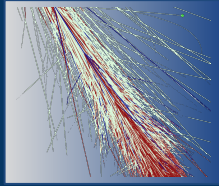


CORSIKA 8

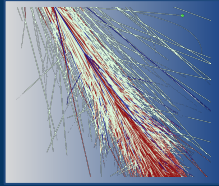
Ralf Ulrich, 13.1.2021



- Welcome
- New contributors/collaborators
- Conferences 2021
 - Oxygen in LHC: <https://indico.cern.ch/event/975877>, no abstracts
 - Spring conferences: DPG, abstract deadline: tomorrow
 - CHEP (virtual), [https://indico.cern.ch/event/948465/](https://indico.cern.ch/event/948465) proc. deadline 28th Feb
 - ICRC 2021 (online), <https://icrc2021.desy.de/>, abstract deadline 15th Feb
 - CORSIKA Workshop 2021



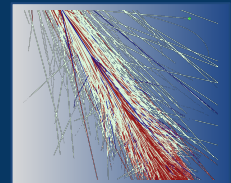
- Random number generation
- CORSIKA 8 Overview
- Cherenkov photon simulation and vectorization
- Others?



- Cascade History: Max
- Status of CORSIKA 8
- Radio - related

- Collect (as last time) at:
<https://gitlab.ikp.kit.edu/AirShowerPhysics/corsika/-/wikis/ICRC2021>
- And define author list

Recent work



First implementation of conan for dependencies. 1301 · opened 1 month ago by Remy Prechelt · Build System · Comments requested · Important · Ready for code review · Refactor · MERGED · 1 · 25 updated 1 week ago
Refactor 2020 magnetic · 56 of 56 tasks completed 1302 · opened 2 weeks ago by Ralf Ulrich · refactory-2020 · Development · MERGED · 0 · updated 1 week ago
Refactor 2020 cascade · 3 of 3 tasks completed 1298 · opened 1 month ago by Ralf Ulrich · refactory-2020 · Refactor · MERGED · 1 · updated 3 weeks ago
migrated corsika::setup 1295 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Development · Ready for code review · Refactor · MERGED · 2 · updated 3 weeks ago
Refactor 2020 utility fixes 1296 · opened 1 month ago by Dominik Baack · Development · Refactor · MERGED · 3 · updated 3 weeks ago
Refactor 2020 sequences · 14 of 14 tasks completed 1288 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Code review finished · Comments requested · Development · Ready for code review · Refactor · code style & format · MERGED · 4 · updated 3 weeks ago
Refactor 2020 env1 · 10 of 10 tasks completed 1293 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Development · Ready for code review · Refactor · MERGED · 109 · updated 4 weeks ago
Refactor 2020 stack implementations · 0 of 4 tasks completed 1292 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Development · Ready for code review · Refactor · MERGED · 12 · updated 4 weeks ago
Refactor 2020 units 1281 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Ready for code review · Refactor · MERGED · 1 · updated 1 month ago
Refactor 2020 geometry · 13 of 14 tasks completed 1289 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Development · Ready to Merge · Refactor · MERGED · 54 · updated 1 month ago
Magnetic Tracking · 7 of 8 tasks completed 1278 · opened 2 months ago by Ralf Ulrich · Project prototype structure 2 (refactoring) · Y master · Development · Important · Media · Ready for code review · Refactor · MERGED · 6 · updated 1 month ago
Resolve "Re-enable oxygen generation for refactory-2020 branch" 1299 · opened 1 month ago by Ralf Ulrich · refactory-2020 · Build System · Development · Documentation · Refactor · MERGED · 1 · updated 1 month ago
Refactor 2020 - Deleted corsika/framework/logging/Logging.h 1297 · opened 1 month ago by Dominik Baack · Ready for code review · MERGED · 1 · updated 1 month ago
Refactory 2020 logging 1287 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Code review finished · Development · Ready for code review · Refactor · MERGED · 37 · updated 1 month ago
Refactory 2020 particles 1286 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Development · Ready to Merge · Refactor · MERGED · 41 · updated 1 month ago
Refactory 2020 utilities · 7 of 8 tasks completed 1284 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Development · Ready for code review · Refactor · MERGED · 26 · updated 1 month ago
Refactory 2020 analytics · 2 of 2 tasks completed 1291 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Development · Ready for code review · Refactor · MERGED · 6 · updated 1 month ago
Refactory 2020 mdm 1285 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Code review finished · Development · Ready for code review · Refactor · MERGED · 57 · updated 1 month ago
Refactory 2020 no python cli 1282 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Build System · Refactor · MERGED · 1 · updated 1 month ago
removed a lot of stray using namespaces and corsika::units:: in entire codebase 1283 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Development · Refactor · MERGED · 1 · updated 1 month ago

Merged

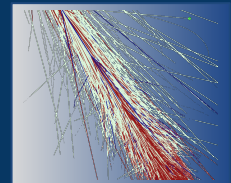


Open



Refactory 2020

1200 · opened 2 months ago by Ralf Ulrich · refactory-2020 · Y master · Build System · Critical · Development · Discussion · Refactor · updated 15 hours ago
Interface to the TAUOLA library for tau lepton decays. 1200 · opened 7 months ago by Remy Prechelt · Project prototype structure 2 (refactoring) · Y master · Code review finished · Development · Ready for code review · 20 · updated 2 months ago
Resolve "Add number of calls in Process interface" · 9 of 9 tasks completed 1276 · opened 2 months ago by Dominik Baack · Project prototype structure 2 (refactoring) · Y master · Code review finished · Comments requested · Development · 13 · updated 2 months ago
WIP: Resolve "Provide simple process example" 1154 · opened 1 year ago by Maximilian Reininghaus · Y master · Documentation · Feature request · 4 · updated 2 months ago
WIP: Initial implementation of (draft) radio emission interface class. 1202 · opened 7 months ago by Remy Prechelt · Radio Emission · Y master · Comments requested · Discussion · radio · workshop discussion · 45 · updated 2 months ago

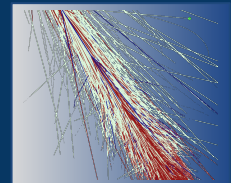


Refactory timeline

- Details on [wiki](#)
- Procedure, recap:
 - Develop new structure (refactory-2020) in parallel to normal dev (master), start 4d1baa1d (March 10th)
 - Freeze dev on 50b12aae3 Oct 26th (refactory-2020-target)
 - Migrate all dev code from March to Oct, finished ~31st Dec
 - Merged Andre's magnetic code into "master" (refactory-2020-target-magnetic)
 - Also migrate into refactory (refactory-2020-magnetic)
 - Since Jan 7th CORSIKA 8, refactory-2020 works (see CI, try)

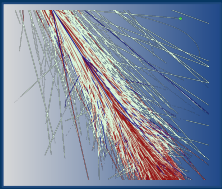
The refactory 2020 needs further work to be finished. Here is the task list:

- ☒ new temporary refactory project [here](#)
- ☒ new directory, file structure, and repository
- ☒ new build system setup, dependencies, modules, externals
- ☒ gitlab-CI is working, done in [AAAlvesJr/corsika!5 \(merged\)](#)
- ☒ updated [Coding Guidelines](#)
- ☒ migration of code
- ☒ CI works in the end
- ☒ assessment of the migrated code **ongoing**
- ☐ final step: merge refactory code into AirShowerPhysics/corsika/master

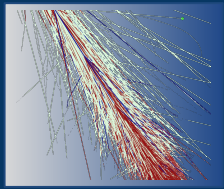


Refactory recap

- Unified directory structure
- No complicated build → minimal build since mostly header-only
- CMake much simpler
- Use conan for all dependencies. Only requirement: python3, pip3, (cmake/gcc/git etc.)
- Code base cleanup (close to 100%, but still room for contributions!):
 - Coding guidelines, naming conventions, no namespace spaghetti
 - Doxygen should be everywhere (major progress)
 - phys_units → now in “framework”
 - SuperSimpleStack → now VectorStack
 - Default tracking: leap-frog algorithm
 - unit test cleanup: simplification of some tests, added more tests, made test better and more complete, coverage: 93.9%, factorized test better.



- Fully functional,
- not yet extensively tested and validated.
- End the old “master” tomorrow by merging “refactory-2020”
- No further work on master, no fixes, no dev, no support, etc.



Next meetings

- Next general phone call:
 - Feb 11th <https://indico.scc.kit.edu/event/2293/>
- Next topical phone call, parallelization:
 - Next week: <https://indico.scc.kit.edu/event/2294/>
- Open slots:
 - 28th Jan, 4th Feb