CORSIKA 8
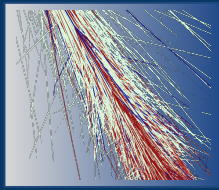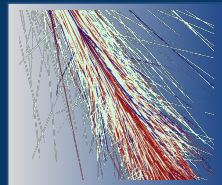
Ralf Ulrich, 11.2.2021

- Welcome

- New contributors / collaborators

- Openness, fairness and policies

- Next conferences

  - vCHEP, https://indico.cern.ch/event/948465/
    proc. deadline 28th Feb

  - ICRC 2021 (online), https://icrc2021.desy.de/,
    abstract deadline 1th March

- *"CORSIKA 8 – A novel and modern tool for particle cascade Monte Carlo simulations"*

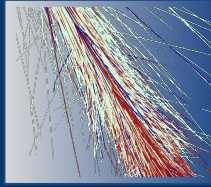 Editors: Ralf, Max, Link to gitlab

- *Random number generation*:
  Editors: Augusto, Ralf (not directly CORSIKA 8)

- *"Cherenkov photon simulation and vectorization"*:
  Editors: Matthieu, Luisa et al.

- *"E.M. showers with PROPOSAL"*: Editors: Jan et al.

ICRC

- Author list:

  https://gitlab.ikp.kit.edu/AirShowerPhysics/corsika/-/wikis/ICRC2021-author-list

- Abstracts

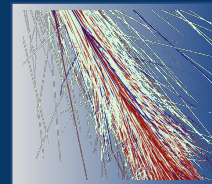 https://gitlab.ikp.kit.edu/AirShowerPhysics/corsika/-/wikis/ICRC2021

  - Collaboration highlight talk: "Status of the novel CORSIKA 8 air shower simulation framework"
  - "Description of hadron cascades by CORSIKA 8"
  - "Air shower genealogy for muon production"
  - "When heavy ions meet cosmic rays : potential impact of QGP formation on the muon puzzle"
  - "Simulations of radio emission from air showers with CORSIKA 8"

  → **please add at least prospective titles on wiki**
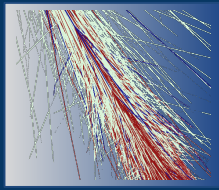
Recent work, Roadmap

- First e.m. physics
- Magnetic fields
- New structure, build system
- New dependency management
- Fast logging

Today

- Output file generation
- Further work on e.m. / hadron / muon physics
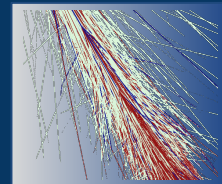- Radio emission
- Cherenkov emission
- Documentation

ICRC

First release (validation and testing)

Documentation

- Register DOI on zenodo as soon as we release anything

- Publish documentation and validation studies

  - Manual, physics / technical "CORSIKA 8 paper", e.g. JINST

  - Low energy hadron models: UrQMD (different versions), FLUKA (different versions), Hillas Splitting, SMASH, DPMJET (partly): physics validation and application in air showers

  - E.M. shower models: PROPOSAL, ZHS, EGS4, EmCa: validation and application in air showers

  - ...

At this point we have to discuss: specific, reasonable, fair rules of authorship, based on actual contributions and commitments

Next meetings

- Next general phone call:
  - March 11th https://indico.scc.kit.edu/event/2293/

- Next topical phone calls (Thursdays 2:30 CEST):
  - Parallelization, next week, https://indico.scc.kit.edu/event/2318
  - E.M. showers, in three weeks, https://indico.scc.kit.edu/event/2320
  - Open slot, in two weeks (finalize CHEP proceedings!)
  - Radio , Fridays (9:30am CEST)