

Parallel processing of radio signals and detector arrays in CORSIKA 8 (talk)

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This contribution describes some recent advances in the parallelization of the generation and processing of radio signals emitted by particle showers in CORSIKA 8. CORSIKA 8 is a Monte Carlo simulation framework for modeling ultra-high energy secondary particle cascades in astroparticle physics.

The aspects associated with the generation and processing of radio signals in antennas arrays are reviewed, focusing on the key design opportunities and constraints for deployment of multiple threads on such calculations. The audience is also introduced to Gyges, a lightweight, header-only and flexible multithread self-adaptive scheduler written compliant with C++17 and C++20, which is used to distribute and manage the worker computer threads during the parallel calculations. Finally, performance and scalability measurements are provided and the integration into CORSIKA 8 is commented.

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