RAZISKOVALNO PODROČJE:
High-Performance Computing, Parallel programming, CPU Architecture, Hardware-software co-design

TIP DELA: researcher, teaching assistant, PhD student

TRAJANJE ZAPOSLITVE: Q4 2022 - Q3 2025

KRATEK OPIS PLANIRANEGA PROJEKTA:

Large scientific projects, such as the high-energy physics experiments at the Large Hadron Collider or Cherenkov Telescope Array and other astrophysical observatories, rely on unprecedented measurements, allowing for discoveries in physics. Most simulation and data-analysis tools traditionally exploit trivial parallelism. However, the evolution of computing architectures with fast GPU and FPGA accelerators and advances in CPU architecture dictates a different approach to algorithm design of the core software, focusing on specific elements at a fine-level granularity.

The objectives of the project are:

1. developing data-processing algorithms and methods for efficient exploitation of the accelerator processing power,
2. accelerating data-parallel algorithms for applications in heterogeneous environments and architectures,
3. scaling the data-processing workflows to exascale systems such as future EuroHPC supercomputers,
4. researching and exploring the potential of the new hardware, such as the European Processor Initiative with the RISC-V platform.