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### Quick News

#### *New test cluster nodes available*

In preparation for the new cluster installation later this year, the NHR@FAU [test cluster](#) now features two Intel Ice Lake nodes, one with 32-core and one with 36-core CPUs, respectively. We have also added one node with AMD's new *Milan* (a.k.a. Zen3) CPUs, a new large-memory machine with 2 TiB of RAM, and a node with an AMD MI100 GPU.

#### *New docs for R modules*

Recent versions of R are available as modules on the Woody and TinyX clusters (using the Microsoft R Open distribution). For more information, please consult our new [R Studio documentation page](#).

#### *Docs on python and Jupyter notebooks*

Our documentation has been augmented with info about using python, Conda, and Jupyter notebooks on our systems. Find the details [here](#).

#### *Missed a talk?*

The NHR@FAU YouTube channel at [tiny.cc/YT-NHR-FAU](https://tiny.cc/YT-NHR-FAU) provides recordings of some talks, lectures, and courses, as far as this is covered by copyright restrictions.

Welcome to the NHR@FAU newsletter! This is where we publish a summary of latest news, past and upcoming events, and frequently asked questions with their answers. Every newsletter will also highlight one NHR@FAU employee so you gradually get to know who is behind this new organization.

## Two NHR@FAU students win prizes at ISC 2021 Digital PhD Forum

ISC, the premier European conference on High Performance Computing and Data Analytics, includes a PhD Forum since 2015. PhD students get the opportunity to present their work with a poster and a "lightning talk"; during the poster session, the PhD Forum committee selects the best contribution(s) for attractive prizes. This year, the purely digital format of [ISC 2021 Digital](#) has forced many changes, but the basic rules of the PhD Forum were still the same. Two NHR@FAU students submitted a prerecorded talk and a poster, and both were accepted for the conference. Even better, they eventually won the first and second PhD Forum prizes.

The first prize went to Ayesha Afzal for her contribution "Noise-driven Cluster-level Performance Modelling and Engineering." Ayesha conducts fundamental research on idle waves, computational waves, and desynchronization effects in massively parallel programs on multicore systems.

The second prize went to Dominik Ernst for his submission "The Best Thread Block Size and other parameters you have to tune for optimal performance on GPUs." His research revolves around performance modeling and optimal tuning parameter selection for GPUs based solely on high-level code features, which is instrumental for code optimization.

## Webinars on LIKWID and OSACA for A64FX

The Research Division at NHR@FAU has recently developed considerable expertise in code performance modeling and optimization for the Fujitsu A64FX processor, the chip that powers Fugaku, the world's fastest supercomputer. The A64FX was developed specifically for HPC applications in an uncompromising co-design effort, and its performance rivals that of current accelerator devices. The [LIKWID](#) and [OSACA](#) tools, developed at NHR@FAU, were ported to the new architecture and can now be used by performance-aware developers. LIKWID ("Like I Knew What I'm Doing") is a collection of command-line tools for topology inspection, thread/process affinity, hardware performance monitoring, hardware configuration, and microbenchmarking. OSACA ("Open-Source Architecture Code Analyzer") provides runtime predictions of assembly kernels for several x86- and Arm-based architectures. Christie Alappat, Thomas Gruber, Jan Laukemann, and Georg Hager conducted two events on using these tools for code optimization on the A64FX. Video recordings are available:

- [Using LIKWID and OSACA for performance analysis on A64FX](#) (Webinar for Brookhaven National Lab and the University of Delaware)
- [LIKWID, OSACA, and Sparse Matrix-Vector Multiplication \(SpMV\) on the A64FX Processor](#) (Open webinar for Stony Brook University)

