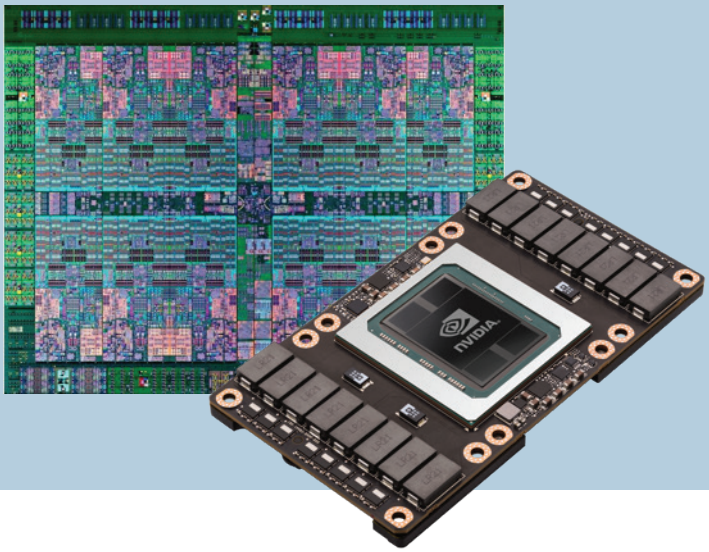
JÜLICH
FORSCHUNGSZENTRUM

PADC

POWER Acceleration and Design Center



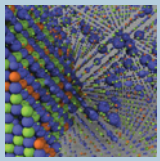
A collaboration between IBM, NVIDIA and the Jülich Supercomputing Centre (JSC) providing support for scientists and engineers to target the grand challenges society faces in the fields of energy and environment, information and healthcare.

Application readiness

One of the main goals of the PADC is to broaden the range of applications that can efficiently exploit HPC architectures based on OpenPOWER technology. Guiding question: Can applications scale to the petascale based on these technologies?

Application: KKRnano

Density Functional Theory (DFT) has become one of the most popular methods in materials research. KKRnano is a DFT-based application that is optimised for very large systems with thousands of atoms. The most performance critical kernel could be efficiently ported to GPUs.

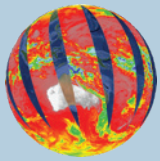


Energy efficiency

Increasing energy efficiency is a major challenge for future super-computing. Fine-grained power measurements allow to investigate power-efficiency and exploit oppor-tunities for optimizing for energy-to-solution.

Application: JURASSIC

Climate research often requires the interpretation of satellite data. JURASSIC uses a radiative transfer model to retrieve pressure and temperature based on infrared spectra. Massive data parallelism allows for a promising GPU port.



Access to OpenPOWER hardware

Both JSC and IBM offer access to GPU accelerated POWER8 servers to increase awareness of the platform.

Dissemination and training

The PADC regularly organizes workshops and its members are actively involved in providing training.

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