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News

Press Releases
Event Announcements
CCT Weekly
Grants and Funding
Student News
Archived News

Einstein Toolkit Software Update Released

The LSU Center for Computation & Technology's (CCT) STE||AR Group is proud to announce the fifth formal release of the Einstein Toolkit, an open, community-developed software infrastructure for relativistic astrophysics. This release includes beginning support for OpenCL (disabled by default). In addition, bug fixes accumulated since the previous release in October 2011 have been included.

The Einstein Toolkit is a collection of software components and tools for simulating andanalyzing general relativistic astrophysical systems that builds on numerous software efforts in the numerical relativity community including CactusEinstein, the Carpet AMR infrastructure, and the relativistic hydrodynamics code GRHydro (an updated and extended version of the public release of the Whisky code). The Cactus Framework is used as the underlying computational infrastructure providing large-scale parallelization, general computational components, and a model for collaborative, portable code development. The toolkit includes modules to build complete codes for simulating black hole spacetimes as well as systems governed by relativistic hydrodynamics. The most important design objective of HPX is to create a state-of-the-art parallel runtime system providing a solid foundation for UHPC-scalable applications while remaining as efficient, as portable, and as modular as possible.

The Einstein Toolkit uses a distributed software model, and its different modules are developed, distributed, and supported either by the core team of Einstein Toolkit Maintainers, or by individual groups. Where modules are provided by external groups, the Einstein Toolkit Maintainers provide quality control for modules for inclusion in the toolkit and help coordinate support. The Einstein Toolkit Maintainers currently involve postdocs and faculty from five different institutions and host weekly meetings that are open for anyone to join in.

Guiding principles for the design and implementation of the toolkit include: open, community-driven software development; well-thought-out and stable interfaces; separation of physics software from computational science infrastructure; provision of complete working production code; training and education for a new generation of researchers.

For more information about using or contributing to the Einstein Toolkit, or to join the Einstein Toolkit Consortium, please visit http://einsteintoolkit.org.

For more information about the CCT, visit: http://www.cct.lsu.edu.

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