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Grid Computing in Numerical Relativity and Astrophysics

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The emerging field of Grid Computing promises to revolutionize the way scientists perform their research in the computational sciences, providing for higher throughput, complex workflows, increased collaboration and use of shared data archives, as well as new scenarios connecting people, compute resources, data storage, high speed networks and experimental devices. We discuss Grid Computing in the context of numerical relativity and astrophysics and show past prototypes and experiments using the Cactus Einstein toolkit and current state-of-the-art work which integrates simulation codes with the Grid Application Toolkit for application use of a range of Grid Services. Finally we present future plans and scenarios for integrating numerical relativity simulations and gravitational wave data analysis via shared data storage and advanced metadata services.