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Total Work-Flow: Exploiting Heterogeneous Computing Architectures for Scientific Computing

This talk will focus on strategies for exploiting increased parallelism to incorporate what are traditionally considered post-processing tasks, e.g., I/O, diagnostics and visualization, into execution that is carried out concurrent to the main computation. This approach allows greater utilization of emerging homogeneous and heterogeneous multi-core HPC platforms, with the potential of allowing full-subscription of the processing capabilities of individual compute nodes. The talk is rooted in the Roadrunner hybrid computing architecture, but expands to suggest more general tools and strategies that will be applicable to a variety of architectures.