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Grid-Enabled High Energy Physics Research using a Beowulf Cluster AKHTAR MAHMOOD, Edinboro University of Pennsylvania — At Edinboro University of Pennsylvania, we have built a 8-node 25 Gflops Beowulf Cluster with 2.5 TB of disk storage space to carry out grid-enabled, data-intensive high energy physics research for the ATLAS experiment via Grid3. We will describe how we built and configured our Cluster, which we have named the Sphinx Beowulf Cluster. We will describe the results of our cluster benchmark studies and the run-time plots of several parallel application codes. Once fully functional, the Cluster will be part of Grid3[*www.ivdgl.org/grid3*]. The current ATLAS simulation grid application, models the entire physical processes from the proton anti-proton collisions and detector's response to the collision debri through the complete reconstruction of the event from analyses of these responses. The end result is a detailed set of data that simulates the real physical collision event inside a particle detector. Grid is the new IT infrastructure for the 21^{st} century science – a new computing paradigm that is poised to transform the practice of large-scale data-intensive research in science and engineering. The Grid will allow scientist worldwide to view and analyze huge amounts of data flowing from the large-scale experiments in High Energy Physics. The Grid is expected to bring together geographically and organizationally dispersed computational resources, such as CPUs, storage systems, communication systems, and data sources.

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