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Remote Visualization in Astrophysics for Large-Scale Data Analysis

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The field of astrophysics is continuously advancing, with an ever-growing influx of data requiring robust and efficient analysis tools. As the Square Kilometre Array (SKA) radio telescopes come fully operational, we anticipate the generation of hundreds of petabytes of data annually, characterized by unprecedented resolution and detail. In this context, scientific visualization becomes a critical component, enabling researchers to interpret complex datasets and extract meaningful insights. The immense volume of data demands not only suitable tools but also substantial infrastructure and computational capacity to analyze it effectively. In this talk, we will discuss how we are addressing these challenges with the development of our interactive visualization tool named VisIVO Visual Analytics. The tool is transitioning from a local visualizer to a remote visualizer, utilizing a client-server architecture. This evolution will allow the software to run parallel visualization pipelines on high-performance computing (HPC) clusters, thereby enhancing its capacity to handle extensive datasets efficiently.

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