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An introduction to SCDF and a case study of sPhenix compu+ng

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Scientific Computing and Data Facilities (SCDF) at Brookhaven Lab began in 1997 when the Relativistic Heavy Ion Collider (RHIC) and ATLAS Computing Facility was established. The full-service scientific computing facility has since supported some of the most notable physics experiments, including Broad RAnge Hadron Magnetic Spectrometers (BRAHMS), Pioneering High Energy Nuclear Interaction eXperiment (PHENIX), PHOBOS Collaboration, and Solenoidal Tracker at RHIC (STAR), by providing dedicated data processing, storage, and analysis resources for these diverse, expansive experiments with general computing capabilities and support for users.

Today, this history of providing useful, resilient, and large-scale computational science, data management, and analysis infrastructure has grown, and the SCDF (formerly SDCC) has evolved to support additional facilities and experiments. These include the National Synchrotron Light Source II (NSLS-II) and Center for Functional Nanomaterials (CFN) at Brookhaven Lab, as well as other DOE Office of Science User Facilities; the ATLAS experiment at CERN's Large Hadron Collider in Europe; and Belle-II at KEK in Japan and DESY in Germany. SCDF also is planning for its role in future experiments with the sPHENIX, Deep Underground Neutrino Experiment, and Electron-Ion Collider.

sPHENIX is a radical makeover of the PHENIX experiment, one of the original detectors designed to collect data at Brookhaven Lab's Relativistic Heavy Ion Collider. Itincludes many new components that significantly enhance scientists' ability to learn about quark-gluon plasma (QGP), an exotic form of nuclear matter created in RHIC's energetic particle smashups.

The SCDF has been providing sPhenix with compu;ng, processing, storage and networking since 2023. We want to cover how it was accomplished in SCDF.

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