

Probing the Quark-Gluon Plasma with the sPHENIX experiment at RHIC

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The sPHENIX experiment marks the first new collider detector at RHIC in two decades, ushering in a new era of precision studies of the Quark–Gluon Plasma (QGP). Designed for high-rate data collection and large solid-angle coverage, sPHENIX enables detailed measurements of jets, jet substructure, heavy quarkonia (such as the Υ family), and open heavy-flavor hadrons and jets. These observables probe the QGP across a wide range of length scales, offering new insight into its microscopic structure and transport properties. Following successful commissioning in 2023, sPHENIX has recorded substantial p+p and Au+Au data sets in 2024 and 2025. This colloquium will present the first physics results from these data sets and discuss the emerging picture of QGP dynamics revealed by sPHENIX.