PHENIX EXPERIMENT AT RHIC

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The PHENIX experiment emphasizes detection of lepton pairs, photons, jets via leading particles, and identified hadrons over a wide range in p_T and mass. A robust physics program has been mapped out for heavy-ion running for QGP studies, p-A running for pQCD and reference studies, and p-p running for spin physics. PHENIX will have good counting statistics out to $p_T/M > 2$ for masses up to 4 GeV/c^2 or more, i.e., over the region where QGP is best distinguished from hadron gas; for light particles (pions) PHENIX can reach beyond $p_\perp = 10$ GeV/c, essential for jet physics. PHENIX is as inclusive as possible regarding various potential signatures of QGP formation and looks for correlated changes in several observables as a function of charged-particle rapidity density. PHENIX emphasizes fine granularity and includes several specialized detectors to handle electron, muon, and photon detection. An isometric view of the detector is shown in Fig. 1.

ORNL concentrates on the physics to be performed with the muon arms and the EM calorimeter, and works on the construction of the muon identifier and on the installation in PHENIX of the WA98 lead-glass detector. Funding for one of the muon arms is provided under DOE's RHIC Additional Experimental Equipment (AEE) program. The second muon arm is funded from Japanese funds as part of an initiative to use polarized proton beams at RHIC to study spin physics.

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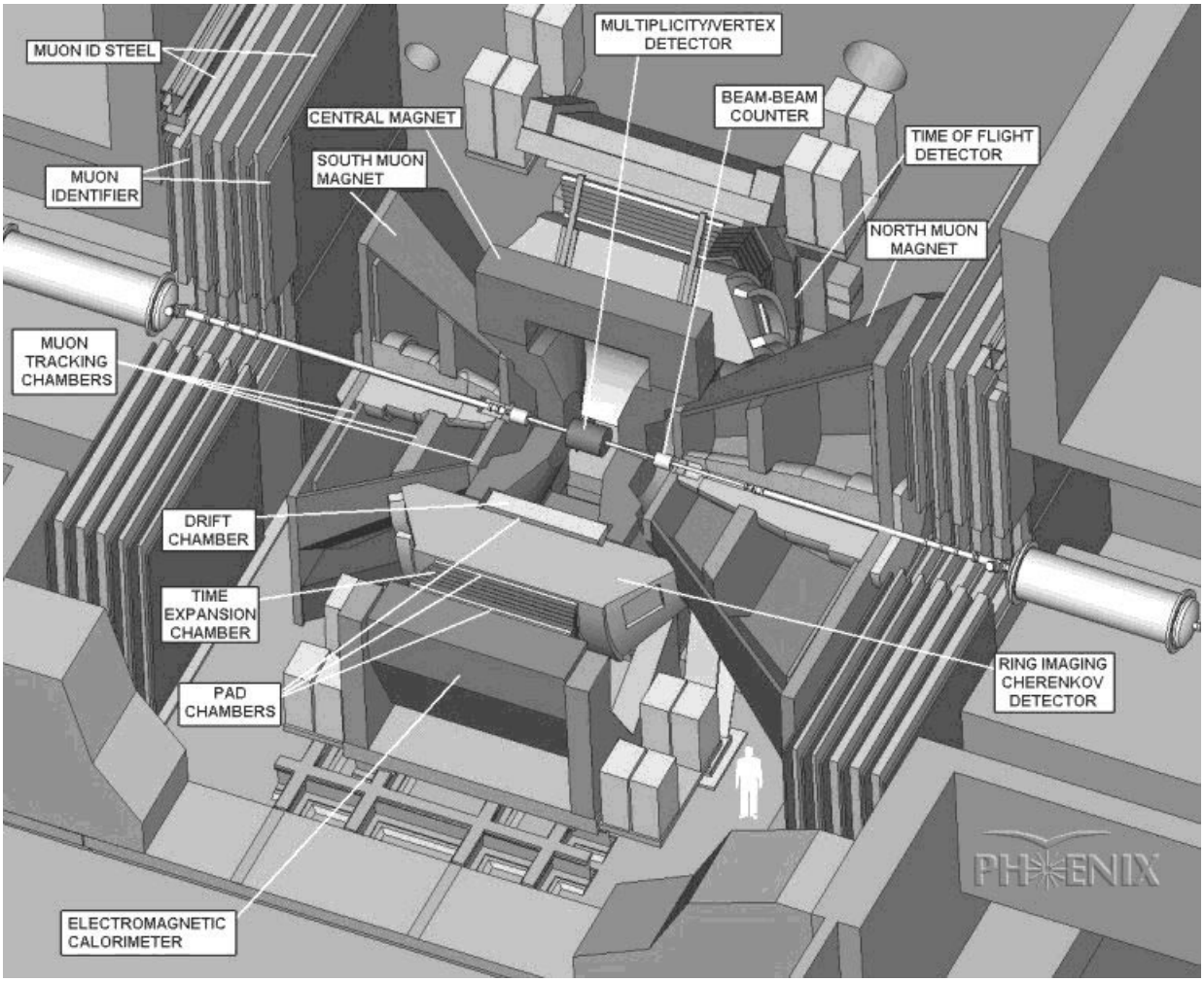

Figure 1: Isometric view of the PHENIX detector, showing the various spectrometer elements.