The Tungsten-Scintillating Fiber Accordion Electromagnetic Calorimeter for the sPHENIX Detector

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Abstract: The PHENIX Experiment at RHIC is planning a major upgrade to enhance its capabilities to measure jets in heavy ion collisions, as well as in p+p, polarized proton, and eventually e+A collisions at the Electron Ion Collider. One major new component of this upgrade will be a new compact electromagnetic calorimeter covering ±1.1 units in η and 2π in φ. It will consist of a matrix of tungsten plates, tungsten powder, scintillating fibers and epoxy formed into an accordion structure that will have a small Moliere radius and short radiation length, thus enabling the calorimeter to have a high degree of segmentation for measuring jets at a relatively small radius and allowing a compact design for the sPHENIX detector.