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The forward sPHENIX detector design and its physics program
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The PHENIX detector at RHIC is planing a complete new design to respond some of the physics questions which emerged after the recent discoveries at RHIC and LHC, namely how jets lose energy in a hot and dense medium with minimal share viscosity. Studies have been carried out also in designing a set of forward detectors (fsPHENIX) including high momentum resolution tracking, calorimetry and particle identification covering the pseudo-rapidity region of $1< \eta <4$. The fsPHENIX can extends the heavy ion program performed by PHOBOS and BRAHMS in p+A and A+A collisions, deeply studying the initial state in such collisions and covering a broad baryon density phase space. Long range correlation can also be measured at RHIC for the first time. The forward region is also crucial for the spin program. Transverse spin asymmetries from Collins and Sivers effects in jets and Drell Yan yields in the unexplored large Feynman momentum x_F region, where these effects are larger, would be accessible as well as small momentum fraction gluon contribution to the proton spin (ΔG). Ultimately, fsPHENIX will be the hadron detector of the future ePHENIX in the eIC RHIC era. This presentation will briefly report the physics, the design and the performance in simulations of fsPHENIX.

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