A collider and detector design issues for the future dedicated QCD facility

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The design criteria for the future collider and the detector dedicated for QCD studies have to take into account that the vast domain of the strong interaction phenomena remain experimentally unexplored. The standard model and its extensions, which provide bench mark processes for optimizing the future high energy ee and pp collider detectors (paying the price of reducing the research scope to verification of a priori predefined scenarios), can serve here only as qualitative exploration guides. The challenge is thus to design a facility optimised for a generic research program.
In my talk I shall argue that the optimal facility for generic research in QCD can be realized at BNL by adding an electron accelerator to the existing RHIC complex and by constructing a dedicated collision point in which variable collision schemes cam be realized: electron-proton, electron-ion, proton-proton, proton-ion, photon-proton, photon-ion.
An optimal detector for such a program is a 4-pi detector capable of measuring and reconstructing complete collision events of momentum and spin tunable beams of leptons,photons nucleons and ions. The design of such a detector imposes important constraints on the collider design: on its energy range, the optics of the interaction point, insertion magnet aperture, their combined functions as low angle particle spectrometers, bunch separations bunch sizes, beam pipe size and shape.
I shall discuss these constraints by proposing a design of the collision point and of the detector.