Understanding the strong interaction described by QCD is at the current frontier of nuclear physics. Jefferson Lab just completed a $300M+ upgrade and will start using intense 12 GeV electron beams to create 3D pictures of the quarks inside the proton and to search for exotic states of mesons. However, these measurements only allow us to indirectly learn about the behavior of the gluons (and virtual quarks) which are the force carriers of QCD. In order to observe these directly, we need higher energies. To achieve this goal, the Electron-Ion Collider (EIC) is the highest recommendation for new construction in the current NSAC long-range plan. The EIC will measure the distributions of quarks and gluons inside the nucleon, but also determine their contribution to the nucleon spin and observe how they are modified inside nuclei. The high energies will also enable production of exotic particles, such as charmonium tetraquarks. This talk will give a background and the physics of the EIC, but also mention some of the innovative ideas for its implementation, including new polarized colliders and novel detectors that are currently being developed for the EIC project at BNL and JLab.

TIME: 3:45-4:35 pm, Thursday, March 31, 2016
(refreshments: 3:30 pm)

PLACE: B-1220 Lehman Auditorium, SEH building, GWU
800 22nd Street, NW (use 22nd street entrance)

METRO STATION: GWU/FOGGY BOTTOM (BLUE & ORANGE LINES)