**BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA**
**INSTITUTO DE FÍSICA**
**"Ing. Luis Rivera Terrazas"**

**SEMINARIO EXTRAORDINARIO**
**"Jesús Reyes Corona"**

# "BRST and Superfield Formalism"

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**Abstract**: The diffeomorphism and gauge symmetries are at the heart of a possible theoretical description of all the four fundamental interactions of nature. The general spacetime coordinate transformation (i.e. diffeomorphism) invariance is one of the key requirements of the gravitational theories [i.e. general theory of relativity and (super)string theories]. On the other hand, the local gauge symmetry transformations (that are generated by the first-class constraints in the terminology of Dirac's prescription for the classification scheme of constraints) are at the heart of a precise theoretical description of three (i.e. electromagnetic, weak and strong) out of four fundamental interactions. For the covariant canonical quantization of the gauge theories as well gravitational theories, the Becchi-Rouet-Stora-Tyutin (BRST) formalism is one of the physically most intuitive and mathematically very rich and elegant methods where the unitarity and quantum gauge (i.e. BRST) invariance are respected together at any arbitrary order of perturbative computations. The usual superfield/supervariable approach to BRST formalism exploits the idea of horizontality condition (HC) where the exterior derivative of differential geometry plays an important role. In this present talk, we will cover all these areas of theoretical high energy physics.

**Auditorio del Instituto**
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**16:00 hrs**