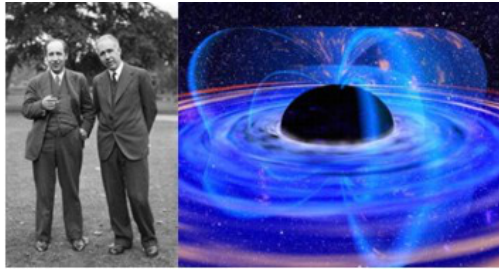


Mathematical Aspects of General Relativity



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Classical Effective Field Theory and Non-Relativistic Gravitation

Saturday, 12 April 2008 10:20 (45 minutes)

I shall discuss an improvement to the (Classical) Effective Field Theory approach to the non-relativistic or Post-Newtonian approximation of General Relativity. The “potential metric field” is decomposed through a temporal Kaluza-Klein ansatz into three NRG-fields: a scalar identified with the Newtonian potential, a 3-vector corresponding to the gravito-magnetic vector potential and a 3-tensor. The derivation of the Einstein-Infeld-Hoffmann Lagrangian simplifies such that each term corresponds to a single Feynman diagram providing a clear physical interpretation. Spin interactions are associated with the gravito-magnetic field. Leading correction diagrams corresponding to the 3PN correction to the spin-spin interaction and the 2.5PN correction to the spin-orbit interaction will be presented.

Presenter: KOL, Barak (Jerusalem)