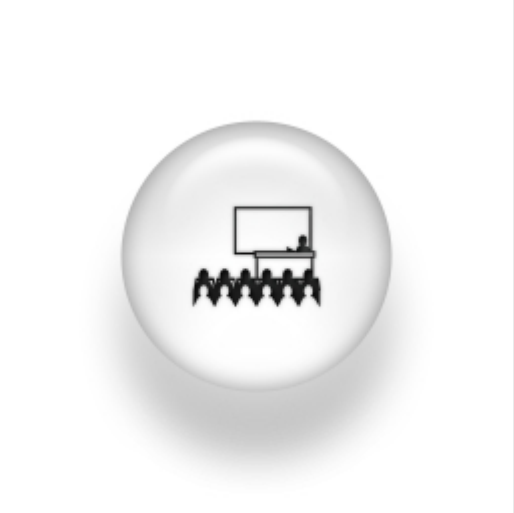
## A new tool for particle hydrodynamics at different scales

Monday, 22nd October 2012. 15:00-16:00



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ABSTRACT:
We briefly review electronic and optical properties of graphite and graphene, atomically thin layer of carbon atoms, and discuss its strength and shortcomings. We next discuss how one can engineer electronic, optical and magnetic properties of graphene by control of lateral size, character of the edge and number of layers. We describe gate controlled triangular graphene quantum dots with zigzag edges which exhibit a shell of degenerate states at the Fermi level, a prerequisite for strongly correlated electron system. We describe transport, optics and magnetism controlled by the gate and by the number of layers. Potential applications of graphene in spintronics, photovoltaics and quantum information are discussed.