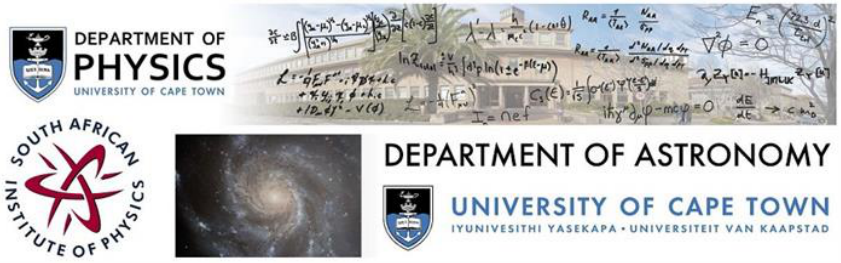

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PLENARY: Strongly Interacting Matter at High Energy Density

Friday, 8 July 2016 08:40 (1 hour)

Abstract content
   (Max 300 words)
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I describe various forms of strongly interacting matter at extremely high energy densities. The Quark Gluon Plasma is the ultimate material at very high temperature and baryon number density. It is composed of deconfined quarks and gluons and the quarks have small masses. One may learn about confinement of quarks and the origin of mass from its study. At high baryon number density and low temperature, there is possibly an intermediate form of matter called Quarkyonic. In such matter, the Fermi sea is made of deconfined quarks, but at the Fermi surface, quarks are confined in mesons and baryons. At much higher baryon densities, matter becomes a superconducting Quark Gluon Plasma. The matter which is responsible for high energy interactions of strongly interacting nuclei and hadrons is composed of a very high phase space density of gluons. This matter is described by stochastic classical gluon fields and is called the Color Glass Condensate. High energy nuclei may be thought of as sheets of Color Glass Condensate. In their collision, yet another new form of matter is made, the Glasma, that evolves into a thermalized Quark Gluon Plasma.

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