

## **Prof. Milan KALAL**

Faculty of Nuclear Sciences and Physical Engineering  
Czech Technical University in Prague  
Czech Republic

kalal@fjfi.cvut.cz

### **Can Our Universe be Understood ? – New Theory of Gravity and Inertia**

For many decades it was assumed that the number of *particles* and *anti-particles* generated during the Big Bang was *not* exactly the same. Thus the surplus of *particles* allowed some of them to exist till our times giving rise to our Universe. The major part of particles *annihilated* with their corresponding anti-particles. However, gradually it became clear that such an assumption *cannot be correct*. As it was confirmed experimentally that *particles* are generated (from the vacuum) always *simultaneously* with their corresponding *anti-particles*. So their numbers need to be the *same*. Should it be the case, however, our Universe would consist of *no matter*. The last hope to save our Universe remained in an expectation that particles and anti-particles will exhibit some *deviation* from their internal *mirror symmetry*. The latest upgrade of LHC in CERN was aimed to provide parameters allowing perform such studies. *Anti-hydrogen* was successfully created. But to a real horror of all involved its properties were found *exactly the same* as that of *hydrogen*. Thus an *urgent need* for explanation of this mystery became imminent. In this presentation one such possible *explanation* will be provided. It is a *completely new theory of gravity* which for the first time since *Isaac Newton* declared his *law of gravity* uncovers possible *mechanisms* responsible for *gravitational* as well as *inertial* forces. Plus many other interesting physical effects (e.g., *gravitational repulsion* between *matter* and *anti-matter*).