Contribution ID: **40**   Type: **not specified**

Newton force with a delay: 5th digit of G

Thursday 15 October 2015 11:00 (30 minutes)

I have recently proposed a slight non-relativistic modification of the Newton law of universal gravitation [1,2]. Accordingly, the 1/r Newton
field is following the motion of the source with a certain⊠ laziness characterized by the delay time τ_G. The background motivation came from
quantum foundational⊠ speculations [3,4] yielding an estimate $\tau\_G \sim 1ms$. Surprisingly, in the simplest model of lazy Newton force, a 1ms
delay predicts significant effect on the notorious 5th digit of the Newton constant G determined in a Cavendish experiment despite its poor
time-resolution.

In 2014, Yang, Miao and Chen advocated independently the concept of finite emergence ⊠time of gravity [5], along with a cautious analysis
of cosmologic, celestial and laboratory ⊠evidences, suggesting stringent upper bounds on τ_G at low frequency cosmological⊠ phenomena and
weaker upper bounds from laboratory experiments at higher frequencies, mentioning my 1ms in the middle. I'll briefly discuss their work.

[1] L. Diósi, Phys. Lett. A377, 1782 (2013)

[2] L. Diósi, EPJ Web of Conf. 78, 02001 (2014)

[3] L. Diósi, J. Phys. Conf. Ser. 504, 012020 (2014)

[4] L. Diósi, Found. Phys. 44, 483 (2014)

[5] H. Yang, H. Miao and Y. Chen: Towards a measurement of the space-time dissipation, E-print arXiv:1504.02545

Primary author: Prof. DIÓSI, Lajos (Wigner Research Centre for Physics, Budapest, Hungary)

Presenter: Prof. DIÓSI, Lajos (Wigner Research Centre for Physics, Budapest, Hungary)

Session Classification: Theory