



Uprzejmie informujemy, że następne seminarium odbędzie się we  
**wtorek, 24 maja 2011 o godz. 10:15 w Auli IF**

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przedstawi referat pt.:

## **Stability of Matter-Antimatter Molecules**

The study of matter-antimatter molecules has a long history, starting with the pioneering work of John A. Wheeler in 1946. Molecular states appears not only in atomic and molecular physics, but also in subatomic physics. We shall review the evidence for molecular states in subatomic systems and discuss the recently observed  $X(3872)$  as a heavy-quark meson molecule [1]. Because a large number of particles and antiparticles are produced in high-energy  $(e^+)-(e^-)$  annihilations and nuclear collisions, we examine further the stability of matter-antimatter molecules with constituents  $(m_1^+, m_2^-, m_2^{\bar{+}}, m_1^{\bar{-}})$  under their mutual electromagnetic interactions [2]. We find that matter-antimatter molecules possess bound states if their constituent mass ratio  $m_1/m_2$  is greater than about 4. This stability condition suggests that the binding of matter-antimatter molecules is a rather common phenomenon.

[1] Cheuk-Yin Wong, Phys. Rev. C69, 055202 (2004) [arXiv:hep-ph/0311088].

[2] Cheuk-Yin Wong and Teck-Ghee Lee, in press in Annals of Physics, [arXiv:1103.5774] (2011).

Zapraszamy,

Marek Rogatko i Mirosław Załużny

Katedra Fizyki Teoretycznej, UMCS