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Proseminar on Theoretical Physics

for students of the physics Bachelor programme
Summer Term 2017

The following talks are from the field of classical mechanics:

M1. “Probability, geometry, and dynamics in the toss of a thick coin”, E. H. Yong and L. Mahadevan, Am. J. Phys. 79, 1195 (2011).
M2. “The domino effect”, J. M. J. van Leeuwen, Am. J. Phys. 78, 721 (2010).
M3. “Oscillations of a candle burning at both ends”, S. Theodorakis and K. Paridi, Am. J. Phys. 77, 1049 (2009).
M4. “Mechanics of two pendulums coupled by a stressed spring”, M. Maianti, S. Pagliara, G. Galimberti, and F. Parmigiani, Am. J. Phys. 77, 834 (2009).
M5. “Motion of a hexagonal pencil on an inclined plane”, A. Rezaeezadeh, Am. J. Phys. 77, 401 (2009).
M6. “A block slipping on a sphere with friction: Exact and perturbative solutions”, T. Prior and E. J. Mele, Am. J. Phys. 75, 423 (2007).
M7. “Fun with stacking blocks”, J. F. Hall, Am. J. Phys. 73, 1107 (2005).
M8. “Impact of a ball on a surface with tangential compliance”, R. Cross, Am. J. Phys. 78, 716 (2010).
M9. “Anti-Newtonian dynamics”, J. C. Sprott, Am. J. Phys. 77, 783 (2009).
M10. “Spinning eggs - which end will rise?”, K. Sasaki, Am. J. Phys. 72, 775 (2004).
M11. “Reinventing the wheel: Hodographic solutions to the Kepler problems”, D. Derbes, Am. J. Phys. 69, 481 (2001).
M12. “Constants of the motion for nonslipping tippe tops and other tops with round pegs”, C. G. Gray and B. G. Nickel, Am. J. Phys. 68, 821 (2000).
M13. “The libration limits of the elastic pendulum”, D. M. Davidović, B. A. Aničin, and V. M. Babović, Am. J. Phys. 64, 338 (1996).
M14. “Remarkable shapes of a catenary under the effect of gravity and surface tension”, F. Behroozi, P. Mohazzabi, and J. P. McCrickard, Am. J. Phys. 62, 1121 (1994).
M15. “Thomas precession: Where is the torque?”, R. A. Muller, Am. J. Phys. 60, 313 (1992).
M16. “Ball moving on a stationary or rotating horizontal surface”, J. Gersten, H. Soodak, and M. S. Tiersten, Am. J. Phys. 60, 43 (1992).
M17. “Isynchronous motion in classical mechanics”, E. T. Osypowski and M. G. Olsson, Am. J. Phys. 55, 720 (1986).
M18. “Nonrelativistic contribution to Mercury's perihelion precession”, M. P. Price and W. F. Rush, Am. J. Phys. 47, 531 (1979).

The following talks are from the field of electrodynamics, they are suitable starting from the 5^{th} (4^{th}) semester:

E1. “Is the electrostatic force between a point charge and a neutral metallic object always attractive?”, M. Levin and S. G. Johnson, Am. J. Phys. 79, 843 (2011).
E2. “Point charge dynamics near a grounded conducting plane”, K. L. Haglin, Am. J. Phys. 78, 1190 (2010).
E3. “On the stability of electrostatic orbits”, S. Banerjee, B. Taylor, and A. Banerjee, Am. J. Phys. 77, 396 (2009).
E4. “The charge distribution on a conductor for non-Coulombic potentials”, D. J. Griffiths and D. Z. Uvanović, Am. J. Phys. 69, 435 (2001).
E5. “Infinite resistive lattices”, D. Atkinson and F. J. van Steenwijk, Am. J. Phys. 67, 486 (1999).
E6. “The flow of electromagnetic energy in the decay of an electric dipole”, H. G. Schantz, Am. J. Phys. 63, 513 (1995).

Topics with a **bold** label have already been assigned to participants.