

USEFUL RESOURCES

The updates, homework assignments, and useful links for APC can be found on SchoolNova's web page:

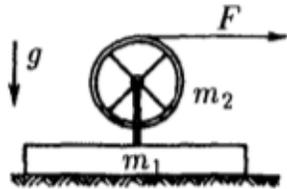
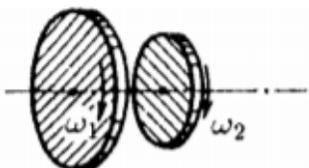
https://schoolnova.org/nova/classinfo?class_id=adv_phy_club&sem_id=ay2020

The practical information about the club and contacts can be found on the same web page.

TODAY'S MEETING

Today's homework is about rigid body rotation and also a bit about oscillations.

HOMEWORK

- Solve the following problems from the previous $F = ma$ exams (the topic of these problems is **Rigid body rotation**):
 - 25 (2009: https://www.aapt.org/physicsteam/2010/upload/2009_F-ma.pdf)
 - 7, 13, 24 (2010: https://www.aapt.org/physicsteam/2010/upload/2010_Fma.pdf)
 - 7, 25 (2011: <https://www.aapt.org/physicsteam/2012/upload/WebAssign-exam1-2011-1-4.pdf>)
 - 10 (2012: <https://www.aapt.org/physicsteam/2013/upload/exam1-2012-unlocked.pdf>)
- Solve the following problems from the previous $F = ma$ exams (the topic of these problems is **Oscillations**):
 - 16, 18 (2009: https://www.aapt.org/physicsteam/2010/upload/2009_F-ma.pdf)
 - 15, 19, 20 (2011: <https://www.aapt.org/physicsteam/2012/upload/WebAssign-exam1-2011-1-4.pdf>)
 - 16, 18 (2012: <https://www.aapt.org/physicsteam/2013/upload/exam1-2012-unlocked.pdf>)
- On a horizontal frictionless table there is a block of mass m_1 . Installed upon it there is a thin-walled cylinder of mass m_2 and radius R which could rotate around its' axis without friction. There is a thin weightless thread wrapped around the cylinder, as shown on a picture. Find cylinder's angular acceleration and block's linear acceleration if the thread is pulled with force F .
 
- Two disks with moments of inertia I_1 and I_2 are rotating around the same vertical axis without friction with angular velocities ω_1 and ω_2 respectively. Disks suddenly come into contact. Because of the friction between the disks after some time there is no relative slipping between the disks. What is the angular velocity of disks then? How much heat was generated during this process?
 
- A block hanging still on a vertical spring extends it by length l . Find the period of small vertical oscillations of the suspended block.
- Two blocks of masses m_1 and m_2 are connected by a spring with the spring coefficient k . What is the frequency of oscillations of such a system?

FOR THE NEXT MEETING

IMPORTANT: The next club's meeting is at 3:00pm, via Zoom, on Sunday, **February 7**.