ADVANCED PHYSICS CLUB

NOVEMBER 16, 2025

Useful resources

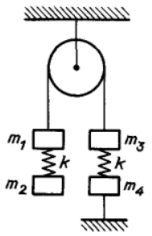
The updates, homework assignments, and useful links for APC can be found on SchoolNova's web page:
`https://schoolnova.org/classinfo?class_id=2252&sem_id=74`
The practical information about the club and contacts can be found on the same web page.

Today's meeting

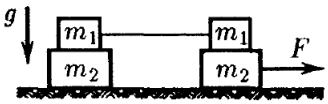
Today we continue with Newton's laws: strings, springs and friction.

New Homework

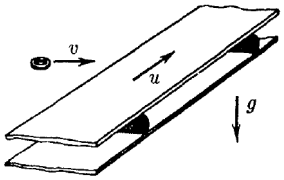
1. F=ma 2020 exam B, problem 9 `https://www.aapt.org/Common/upload/2020-Fma-Exam-B.pdf`
2. F=ma 2017, problem 19 `https://www.aapt.org/physicsteam/2018/upload/2017-Fma-exam.pdf`
3. The system shown on the figure is initially in equilibrium. Find the accelerations of all the blocks after the string holding the block m_4 from below is suddenly cut (in equilibrium this string has some tension).



4. A rubber cord has mass m and elasticity constant k. It is hung by one end. Find the total elongation of the cord.
5. On an icy road friction coefficient between the tires of a car and the road is 9 times less than on a dry road. What speed should the car be driving at on an icy road for the braking distance to be the same as for 30 miles per hour on a dry road?
6. A system of blocks lies on a horizontal frictionless table, as shown on the figure. The bottom right block is being pulled to the right with force F. Friction coefficient between blocks m_1 and m_2 is μ. Find the acceleration of every block in the system.



7. A horizontal conveyor belt is moving with speed u. A puck flies on the belt with initial velocity v perpendicular to the belt. Friction coefficient between the puck and the belt is μ. Find the maximal width of the belt such that the puck will still reach the opposite side of the belt.



For the next meeting

IMPORTANT: The next club's meeting is at 2:40 pm, in-person, on Sunday, **November 23**.