Theoretical Mechanics, Quiz 9: ANGULAR

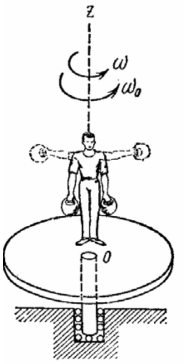
Change of Principal Angular momentum of a system

INNOPOLIS UNIVERSITY

Quiz 9

The initial angular velocity $\omega_0 = 100$ *rev/min* was applied to a person with weights in his hands standing on a given setup, which can rotate about a vertical axis 0z without friction. At the same time, the moment of inertia of the person and the bench with respect to the axis of rotation is equal to $J_0 = 0.12\ kg\ m^2$.

At what angular velocity will the bench with the man begin to rotate if he increases his moment of inertia to $J_1 = 0.8\ kg\ m^2$ by spreading his arms with weights apart?



Quiz 9, Task 1