**The laboratory work 8**

A system is given out of a cargo of mass m, connected with a weightless rigid, resiliently supported beam. Let 2l be the length of the beam, and c0 – the coefficient of rigidity of the spring. One end of the beam is fixed to a hinge located on a fixed support.



At the initial moment of time, there is a single vertical impact on the load with the magnitude of the instantaneous impact impulse S. The speed of the cargo receives an instantaneous increment, from which the initial conditions follow:



where φ is the angle of deviation of the system from the equilibrium position. The motion of the system is described by the following equation: ;

25 seconds after the start of the oscillations, the mass of the load m instantaneously decreases by 50%. Further the movement of the system continues, but already with the load of a new mass.

If the angle φ becomes larger than the limiting value , the system is destroyed.

Construct a model of the "beam-load" system, as well as a model of a system consisting of two "beam-load" systems, unconnected with each other. The second beam with a load is identical to the first one, except that a blow to the load in it occurs 10 seconds after the impact of the load in the first "beam-cargo" system.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variant | L | M | C0 | S |
| 1 | 10 m | 2 kg | 1.6 |  |
| 2 | 2 m | 9 kg | 1.2 |  |
| 3 | 8 m | 2 kg | 1.3 |  |
| 4 | 4 m | 4 kg | 1.1 |  |
| 5 | 7 m | 5 kg | 1.5 |  |
| 6 | 11 m | 3 kg | 1.4 |  |
| 7 | 5 m | 6 kg | 1.6 |  |
| 8 | 9 m | 3 kg | 1.5 |  |