

Answer on Question 48598, Physics, Mechanics — Kinematics — Dynamics A tube of length L is filled completely with an incompressible liquid of mass M and close at both the ends. The tube is then rotated in a horizontal plane about one of its ends with a uniform angular velocity ν . The force exerted by the liquid at the other end is?

Solution

Rotating causes centrifugal acceleration

$$a = \nu^2 L$$

Force exerted is equal to mass of liquid multiplied by this acceleration:

$$F = a \cdot M = \nu^2 LM$$

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