Advanced Dynamics
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Module No # 06
Lecture No # 31
Planar Kinetics: Impulse Momentum Relations – I

In this lecture we are going to look at the impulse momentum relations for planar kinetics of rigid bodies.

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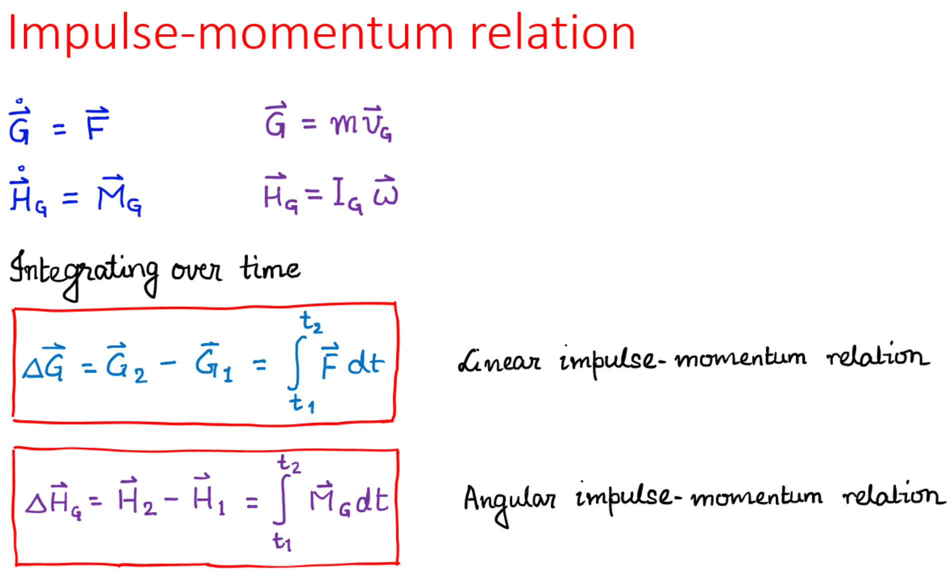

The above slide recapitulates the equations of motion of planar kinetics of a rigid body with the angular momentum equations written about the center of mass G. The linear and angular impulse momentum relations are also shown.

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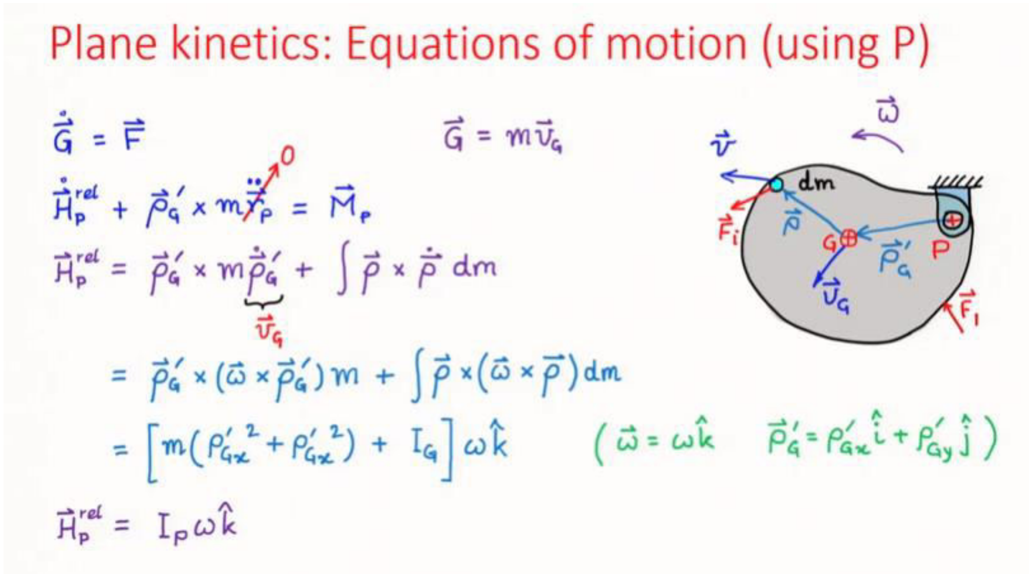

The angular dynamics equation of motion about a point P which is fixed in inertial space is shown in the above slide. Since P is a fixed point, acceleration of P is 0, and we have a simplification. The expression of the relative angular momentum of the body is derived above.

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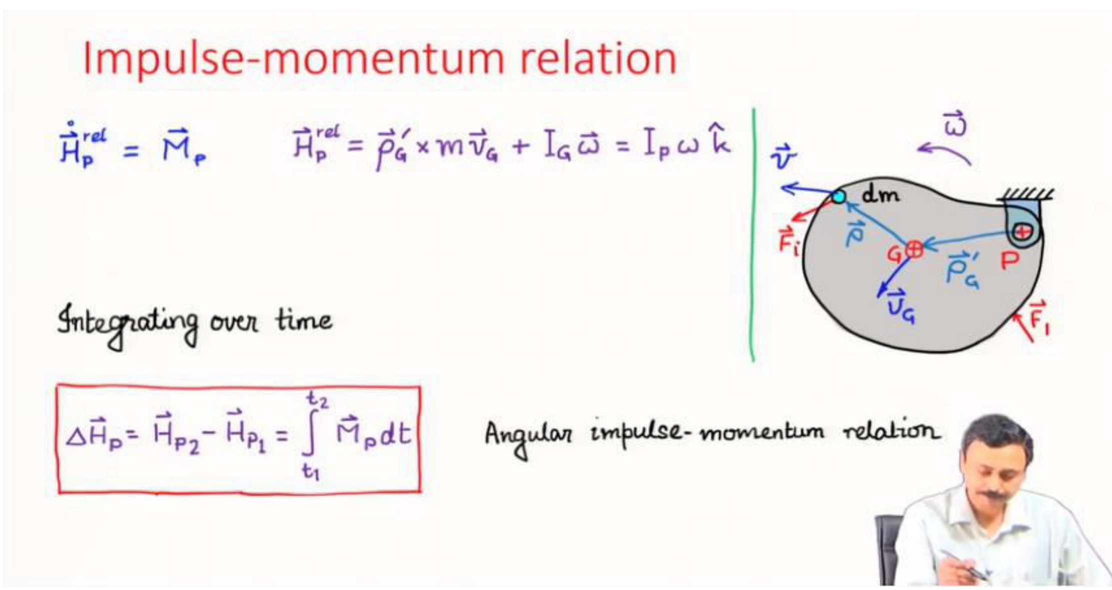

The angular impulse – momentum relation about P is presented in the above slide.

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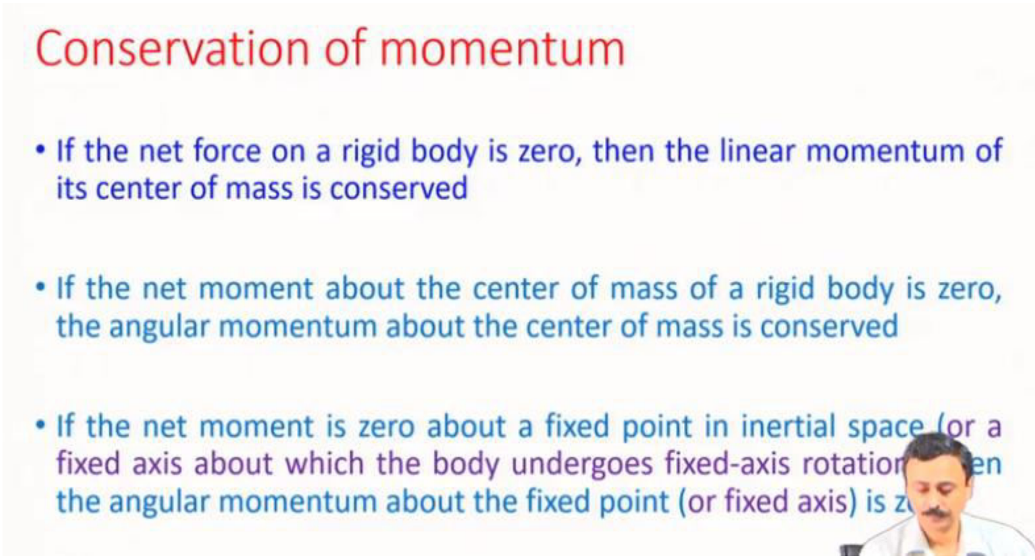

The conditions under which linear momentum and angular momentum of a body are conserved is presented above.

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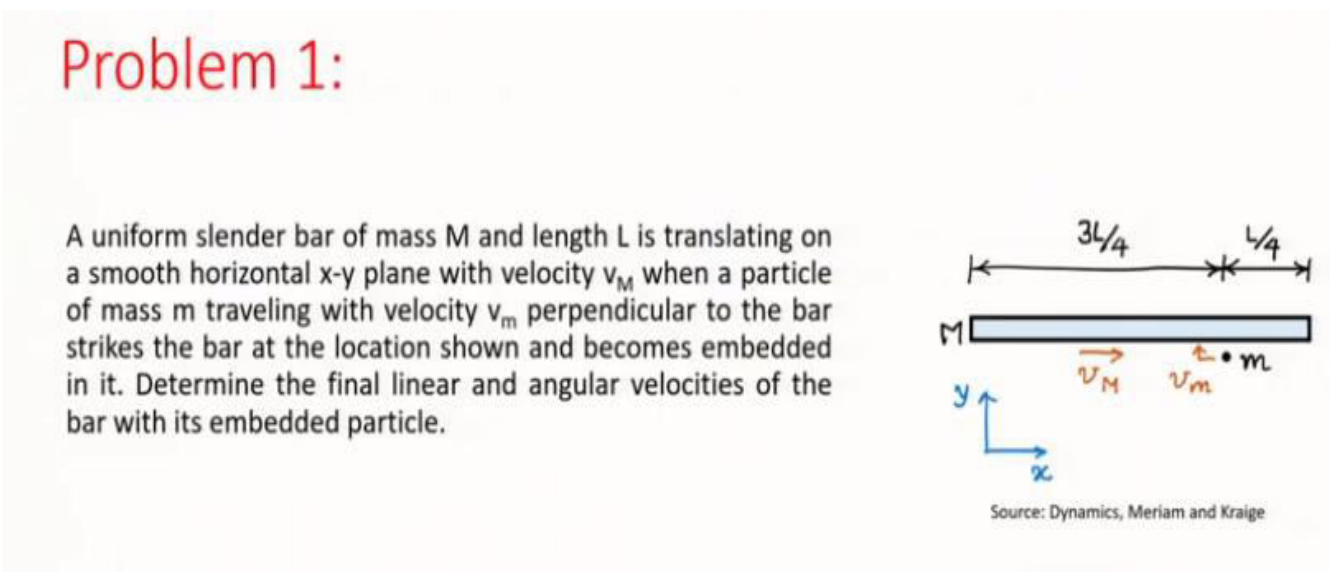

We consider the above problem.

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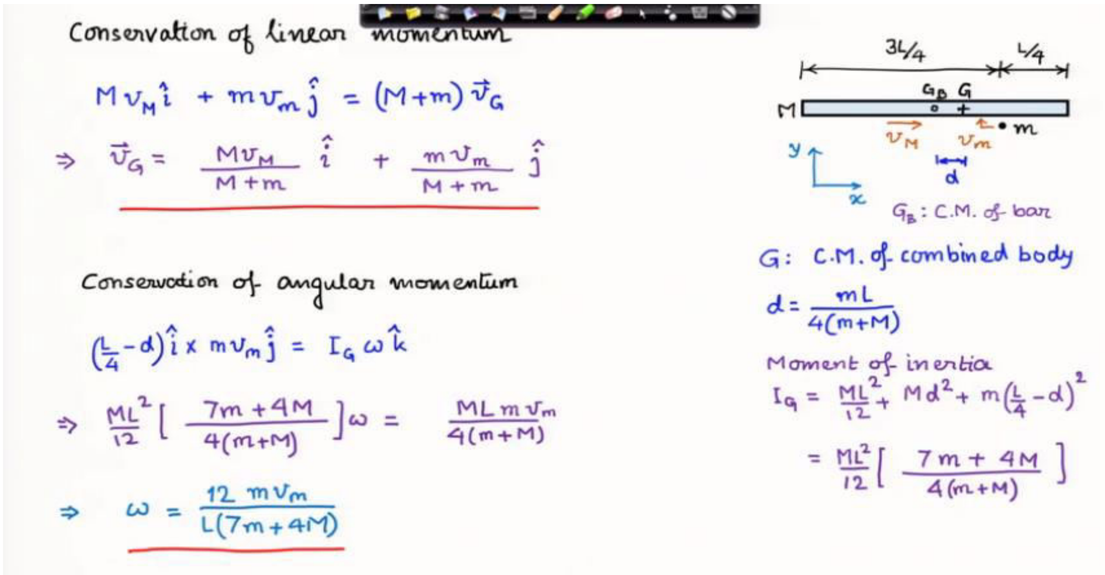

The solution steps are detailed in the above slide.

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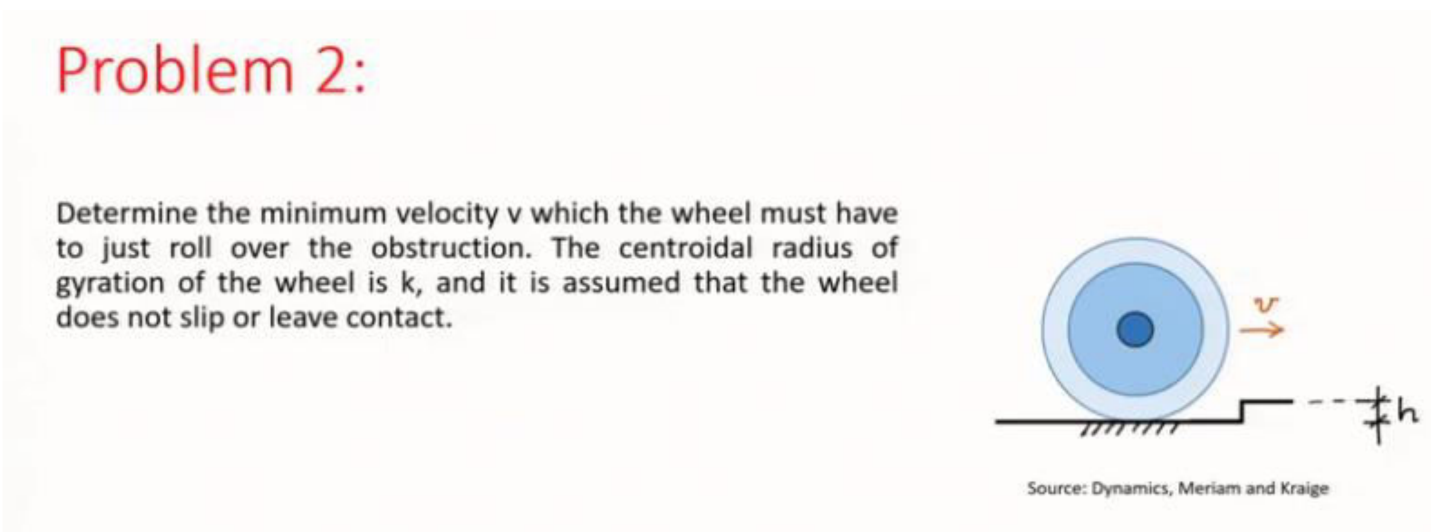

We consider the above problem.

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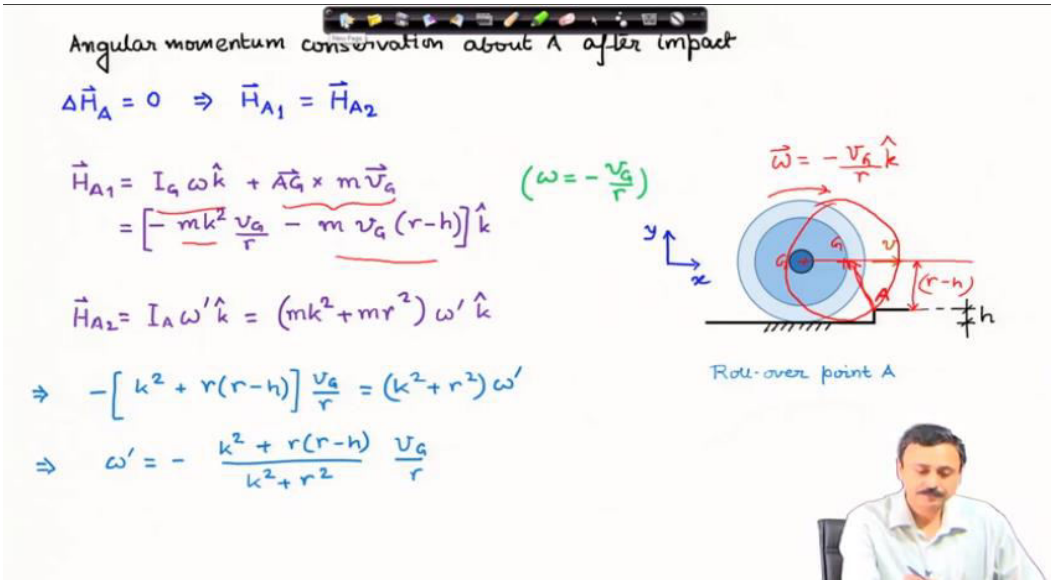

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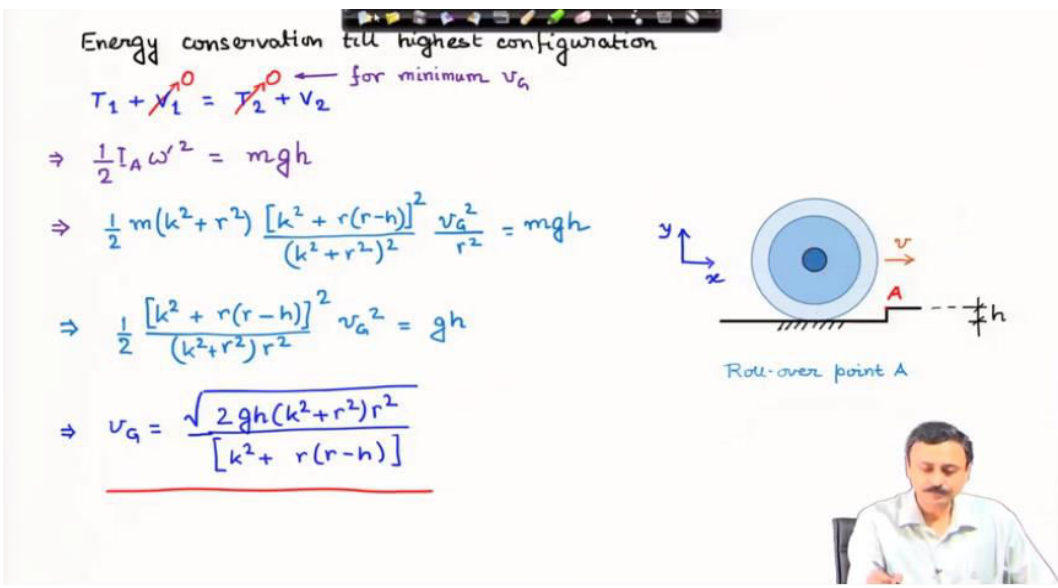

The 2 slides above provides the detailed solution of the problem.

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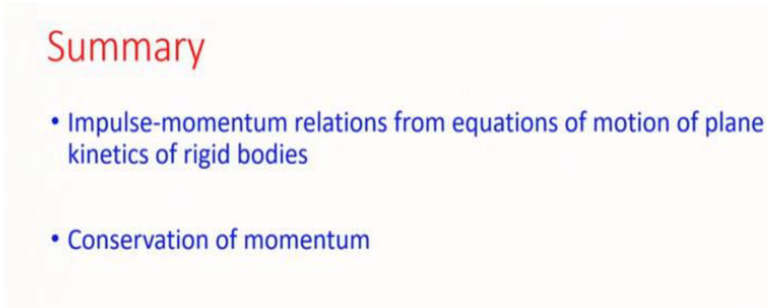

The summary of the discussions is provided above.