Advanced Dynamics
Prof. Anirvan Dasgupta
Department of Mechanical Engineering
Indian Institute of Technology, Kharagpur

Lecture - 42
Kinematics of Rotation - II

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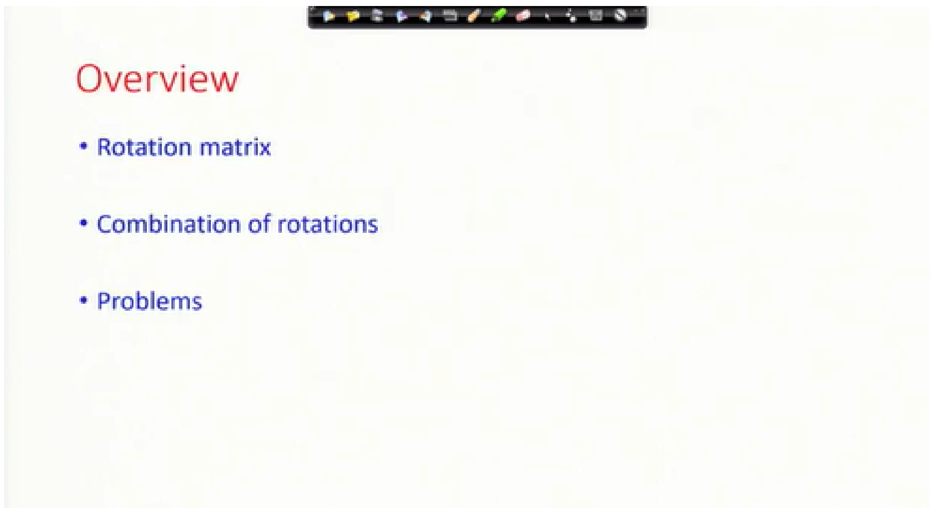

We are going to continue our discussions on Kinematics of rotation. In this lecture I am going to talk about the rotation matrix once again and will recapitulate what we have discussed. Then I will look at the combination of rotations, the previous lecture we had looked at single rotations and represented the rotation matrix. Here we are going to look at the combination of rotations and look at problems.

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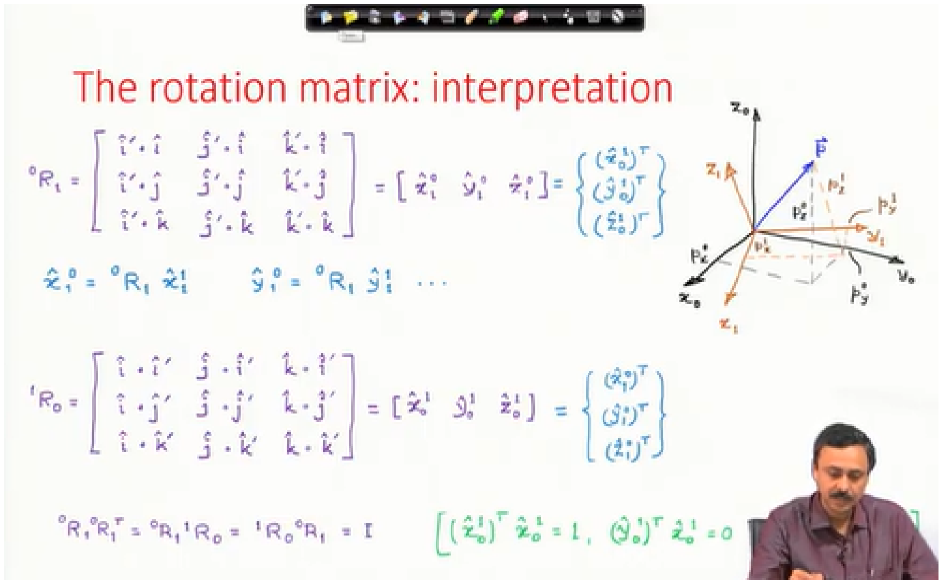

The above slide recapitulates the discussions in the previous lecture.

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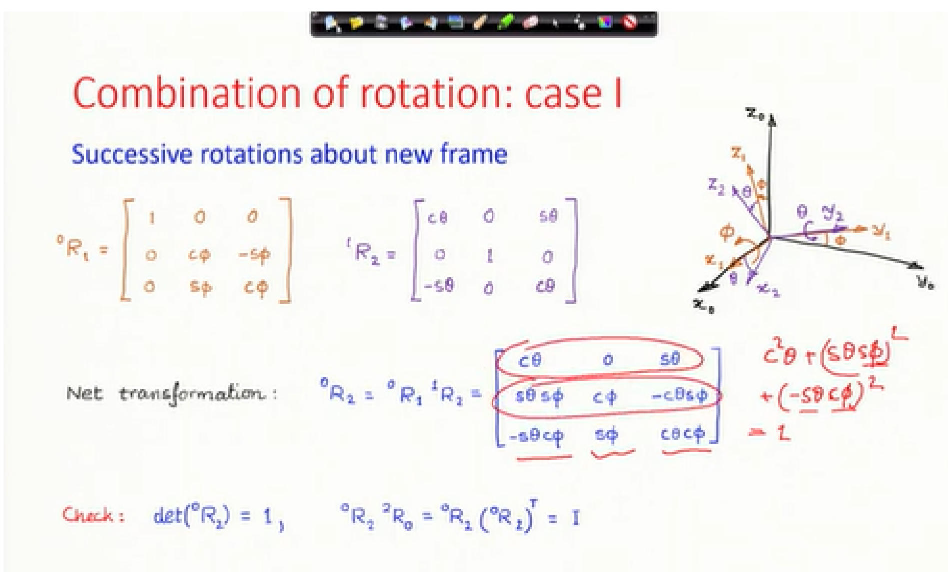

Now let us look at successive rotations. This is presented in the slide above for successive rotation about the new frame axis.

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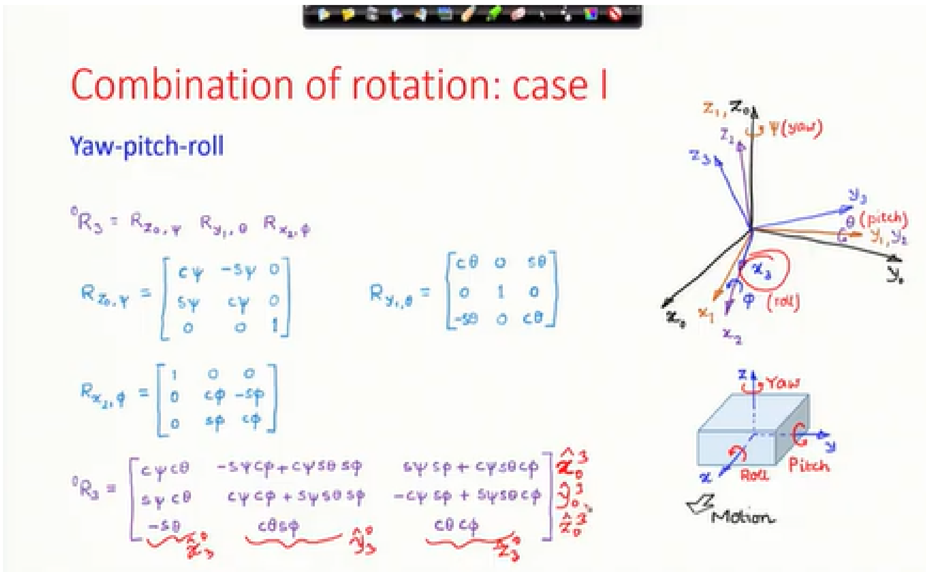

We look at an example of a yaw pitch roll, combination of rotation as shown in the slide above. This is a very useful combination of rotation for studying rigid body dynamics.

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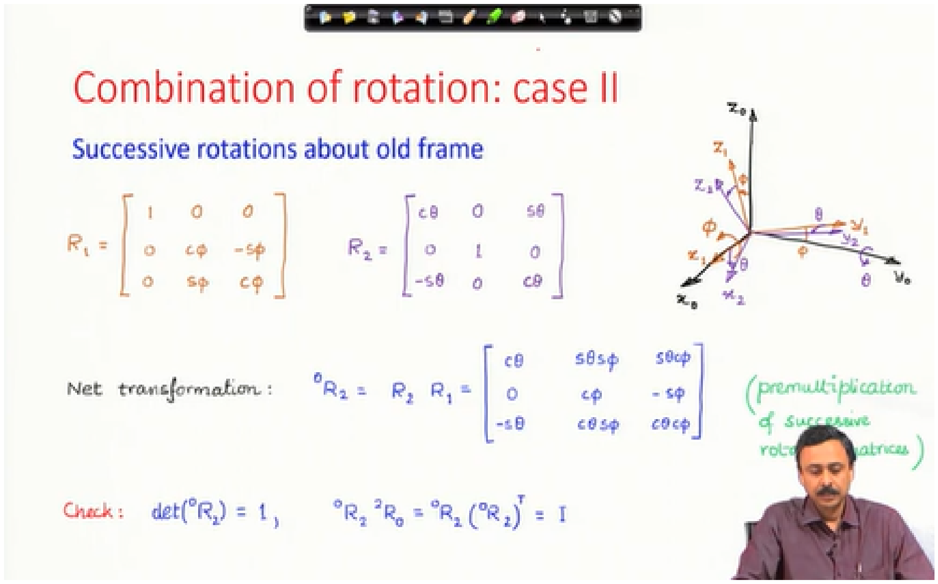

Now we look at a second case of combination of rotation in which successive rotations are given about the old frame axes. This is presented in the above slide.

We consider the following problem.

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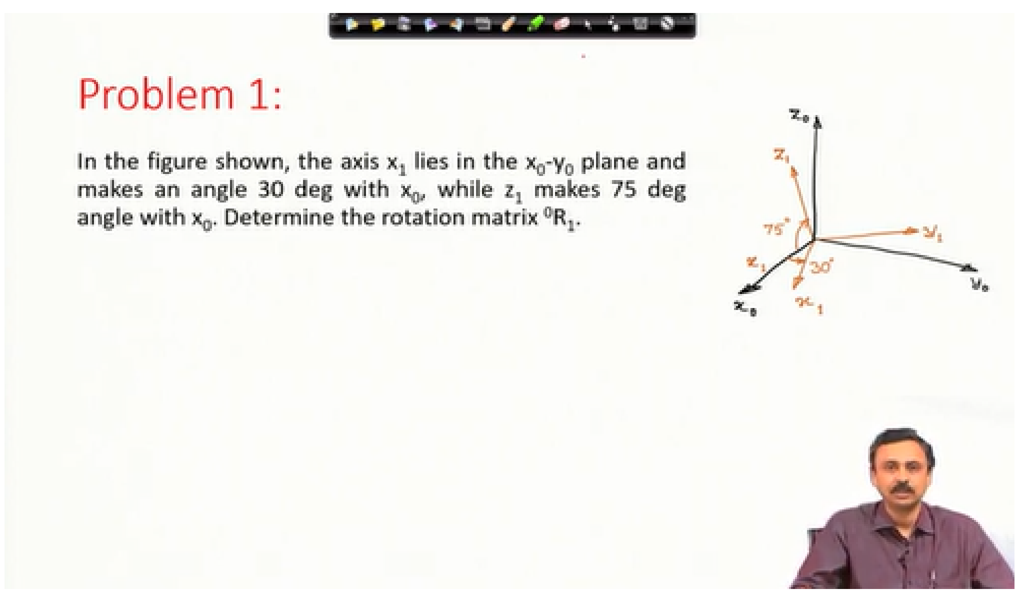

The detailed solution is provided below.

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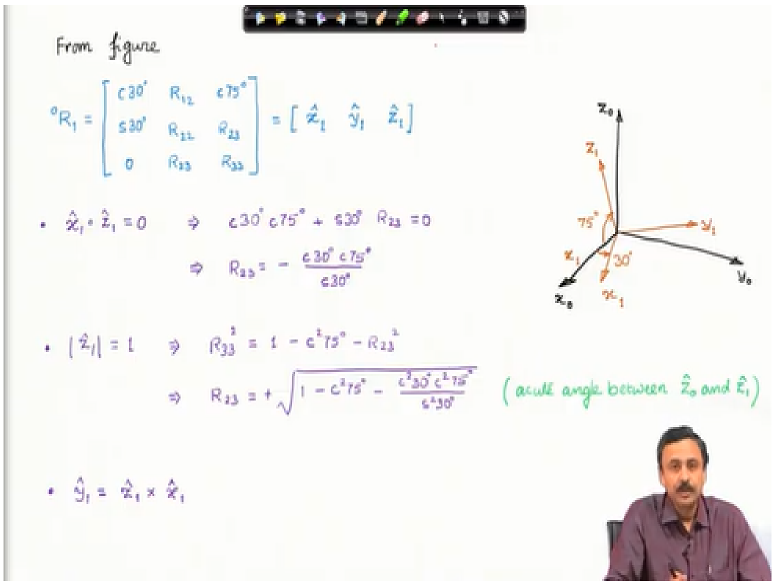

We consider the next problem below.

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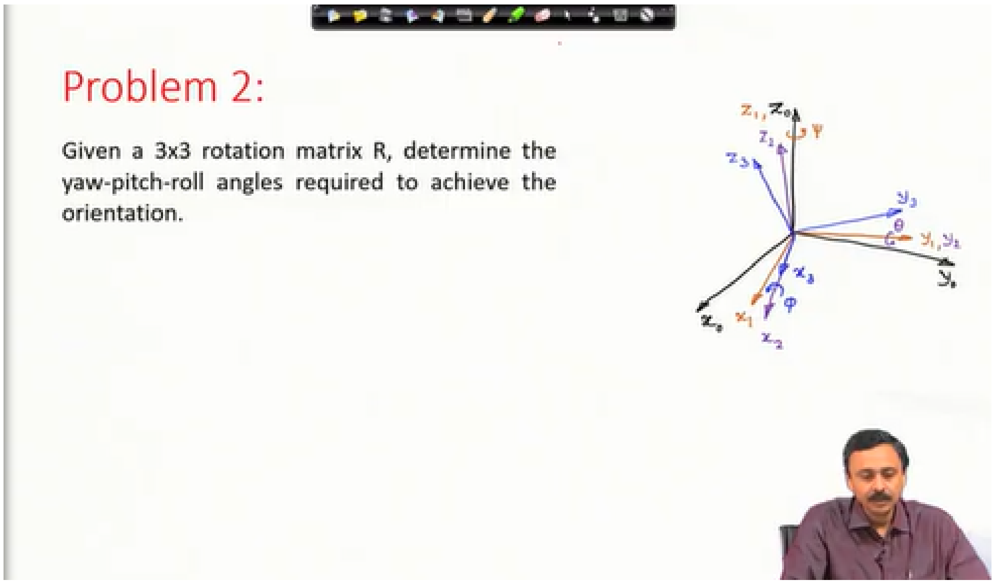

The solution is presented in the two slides below.

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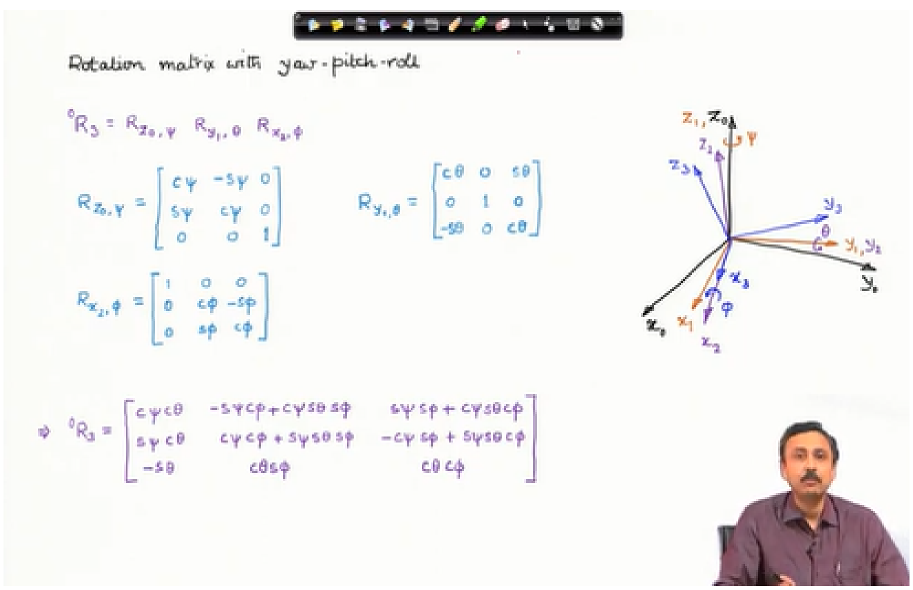

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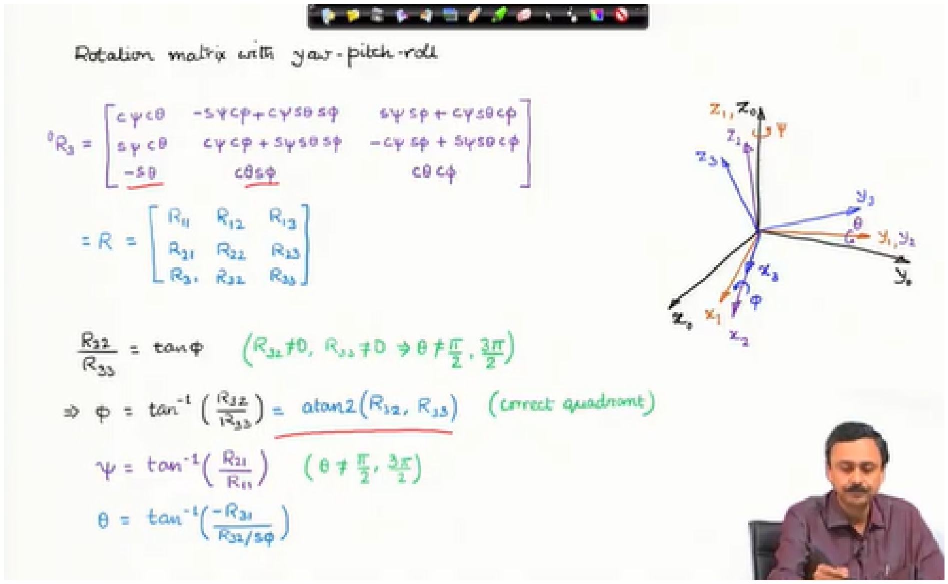

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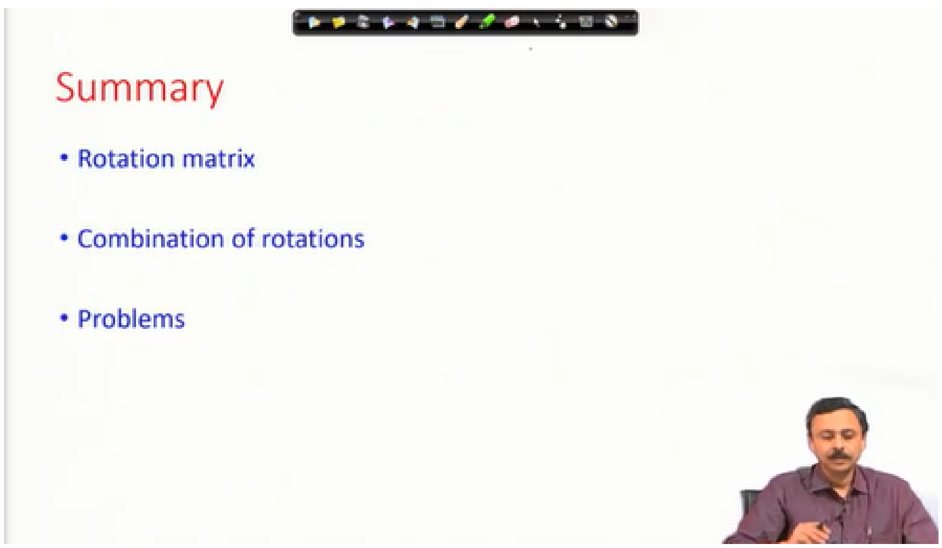

Summary of the lecture is provided above.