
Departmental Seminar

Seminar Title	: An inclined beam-based vibration isolator design to attain quasi-zero-stiffness characteristics
Speaker	: Mr. Vinod Yadav
Supervisor	: Prof. Mohit Lal
Venue	: CAD LAB, ID
Date and Time	: 18 Jul 2024 (11:00 am)
Abstract	: A linear spring element combined with a nonlinear spring element has low dynamic stiffness and high static stiffness. In this work, a quasi-zero-stiffness (QZS) vibration isolator based on positive stiffness and negative stiffness characteristic is explored. Using finite element simulation, the nonlinear stiffness of the inclined beam caused by the buckling effect and the linear positive stiffness of the circular arc beam is examined. These two beams are performance. The static characteristics is performed to obtain the operational displacement range. The parametric study illustrates the effect on force displacement characteristics due to variation in thickness of circular arc beam. The dynamic characteristic of the QZS isolator is studied under different damping ratio and excitation. Additionally, a stability study is carried out to identify the frequency response curve's unstable area. Combination of inclined and circular arc beam may be a good candidate to fulfil desired requirement to achieve a wide frequency range of isolation.