







103rd Indian Science Congress

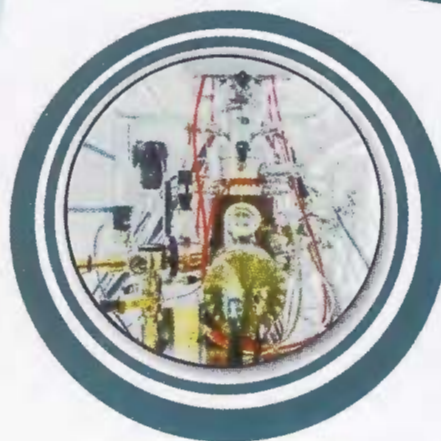
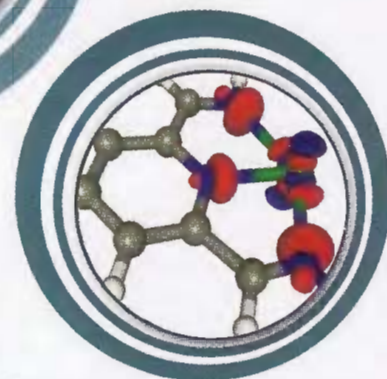
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THE PHYSICS OF VIBRATION CONTROL MECHANISMS & DEVICES FOR PLANT MACHINERIES IN INDUSTRIAL ENVIRONMENT.

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Abstract PHYSICAL SCIENCES Section – S.N.BAGCHI, Head Technical Design,
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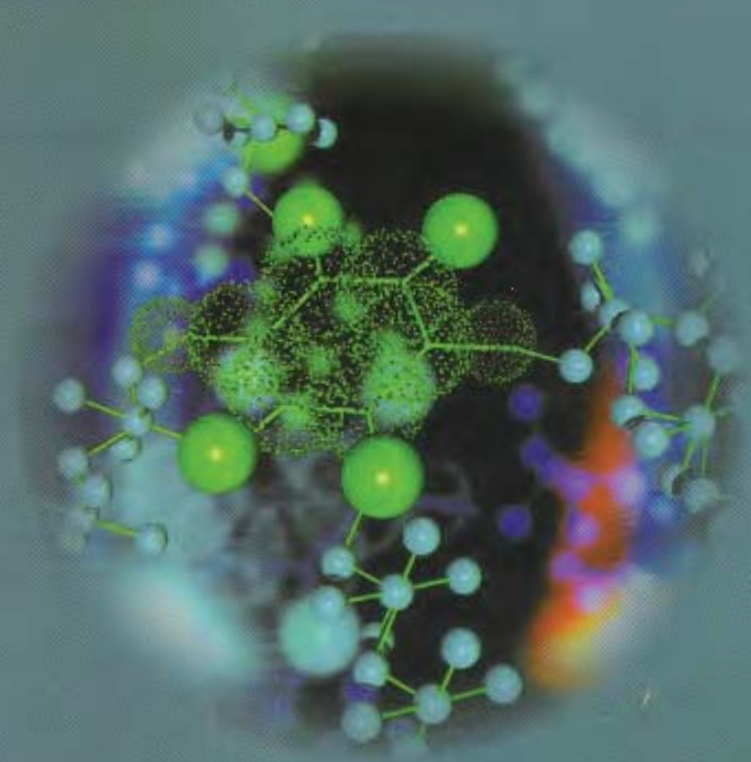
Abstract

This is an Industry oriented presentation describing the design and selection of vibration isolators for industrial application. The paper is of Inter-disciplinary nature involving Engineering Physics and Mathematics. The power plant machineries like Turbo-generator, DG sets, Pumps and coal Crushers will be discussed with actual case studies. The mathematical physics oriented design aspects like symmetry concepts and load optimization will be focused.

In introduction the Fundamental Forces of nature and the Vibrations and oscillations in Large scale universe to vibration in atoms and molecules will be briefed. The wide frequency range from VLF to UHF frequency band will be tabulated. An analogy of Machine Vibration with Molecular Vibration spectrum in Infrared frequency band will be presented.

The design and selection of vibration isolators for Laser Metrology, Spectroscopy and holography related experimental set ups. In manufacturing and fabrication of micro size components like MEMS (Micro Electro Mechanical systems) and micro chips etc., even the ground disturbances of micro-seismic nature affects the dimensional accuracy of the fabricated parts. The effect of ground disturbances of Seismic and micro-seismic order on Interferometer fringes and holographic patterns will be discussed.

Key words – Vibration & Shock Spectra, Machine Vibration, spring –Viscous Dampers Air Spring, Eigen- frequency, Load optimization and Isulation efficiency calculation.



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