

Seismograph

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Abstract:-

Today article is about seismograph. The first seismograph was invented in China by an mathematician and astronomer Zhang Heng. In 19th century, modern seismograph was developed. Luigi Palmieri, in 1856, first invented electromagnetic seismograph to record the time of the earthquake.

A seismograph is fundamentally a pendulum. It is based on the principle that because of his inertia the have a pendulum Bob remains still when the ground largest minut age during an earthquake. From the point of view of a man standing on the ground it is a pendulum that is vibrating. Recording pen attached to the bob therefore traces this vibration on a paper that moves with the ground during an earthquake. The recording paper with hours in minutes marked on it is want on a drum which rotates and moves forward uniformly under the recording pain by means of a screw arrangement and the pin dresses a continuous line on the

paper of arrival of the disturbance of the recording sheet recording avoiding friction the recording pain is usually chosen to be light spot reflected from a m attached to the is produces a fine black line on the photographic paper.

Increase the magnification a flat copper coil mounted on the bottom of the pendulum is kept between the poles of a strong permanent magnet attached to the ground firmly. The quivering motion between the coil and the magnet produces induced EMF that is lead to a sensitive galvanometer. The lights for reflected from the mirror attached to the moving element of the Galvanometer produces a magnified record of the pre wedding on photographic paper. Tortoise recording both the pendulum and the Galvanometer and arranged to be critically damped. The Eddy Currents induced in a copper plate mounted on the bone and placed between the poles of another strong permanent magnet making the pendulum critically damped. For proper recording of ground motion during an earthquake 36 most graph for required one vertical and two horizontal. The vertical seismograph records the vertical motion of the ground under the observatory when it is struck by a

compression wave. It is simply await suspended from a spiral spring attach to a rigid support. The weight is free to move up and down the relative motion of the weight and the support is recorded.

Horizontal seismograph records the horizontal motion of the ground and observatory when it is struck by shear wave of the earthquake. For this purpose we simply need a horizontal pendulum. Time of arrival of compression of primary waves which is longitudinal in nature can be known from the recording sheet mask with hours and minutes of vertical seismograph.

The same for shear or secondary waves which is transverse in nature is similarly known from one or other of the horizontal seismograph. Primary waves travel faster than shear waves. By measuring the time lag of arrival between primary waves and shear waves at an observatory the distance of the epicenter of the earthquake from the observatory can be determined. Going the distance is a babycenter from the observatory widely separated of the observatory which have recorded the quake one can easily locate the epicenter of the quake.

Reference:-

Classical mechanics :- prof. Chowdhary