

## ABSTRACT

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*Seismic Wave Instrumentation System is a technique used in geophysical surveys to determine the depth of bedrock, bedrock lithology, faults, and rock hardness. The system will acquire elastic waves from propagation that depend on the nature of rock elasticity. When seismic waves that propagate meet the boundary fields between layers, some of these waves are reflected (reflected) and some are refracted (refracted) then the physical symptoms are observed by capturing these waves through the geophone as well as strengthening with the instrumentation amplifier module. Parameters that will be known from this are the frequency and speed value based on the calculation of the travel time of the wave between the vibration source and the receiver (geophone). The wave refraction survey consists of two parts, namely data retrieval in the field and analysis for graphics using MatLab which is already integrated with the Thingspeak IoT platform. This graph analysis aims to determine the average velocity of seismic waves in the layer. Based on average speed and wave arrival time, the thickness and type of soil at each layer can be determined. The results of the analysis of seismic refraction surveys obtained from the data that the analysis method can show the soil profile.*

*Keywords: Seismic Waves, Geophone, Instrumentation Amplifiers*