

Observation of the Lamb wave created by the eruption of the Hunga volcano using cosmic rays detected by the HAWC observatory

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The explosion of the Hunga volcano on January 15, 2022 created a pressure wave that circled the globe several times. The HAWC water Cherenkov detectors saw very clear variations in the count rate of particles from atmospheric showers for four passes of the pressure wave above the site in central Mexico, at 4,100 m altitude, being at a distance of 10,000 km from the volcano. Combined with the local pressure measurements we see a perfect anti correlation of the pressure profile with the count rate profile, but the barometric coefficient is different for the single particle count rate to that of the cosmic ray showers. The shape of the count rate variations for the first pass are different than the pressure variations at lower altitudes reported worldwide, but it agrees remarkable well with the barometric measurements done very close to the volcano in the Tonga island. For details see: <https://arxiv.org/pdf/2209.15110.pdf>

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