

# The problem of measuring hailstone's impulse: general conception of the measuring device, laboratory model of the device and the result of its first test

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The purpose is to create a device that will allow us to measure the impulse of a hailstone during hail. While building such a tool, in order to make one with high quality and accuracy we should consider many factors.

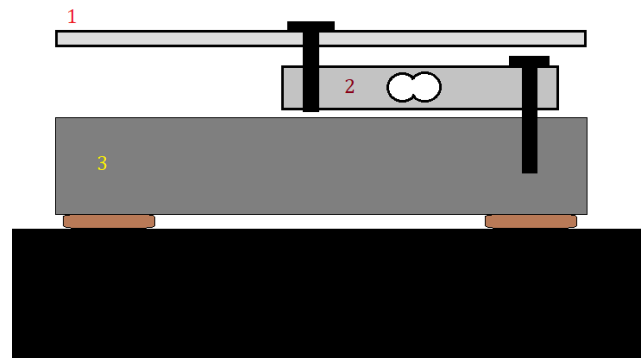
One of them is the geometric shape of the tool. The goal is to develop a shape that will give us the opportunity to create an array of measuring tools. With them, we will be able to conduct a field experiment where it is hailing. That is how we will measure the frequency and impulse of falling hailstones.

The second important factor is the mass of the device. Since the device is a physical object, it is expected that any kind of physical interaction will cause its movement. This means that part of the hailstone's impulse will be consumed for the device's motion which in turn will cause decrease in impulse measuring accuracy.

The first laboratory model of the device is shown in figure. It consists of three main parts. (1) is the place where a hailstone should hit. After that, (2) part, which is a piece of metal, will be bent. There are a couple of deformable resistors on the (2) part which will convert mechanical motion into an electric signal that later will be amplified.

Subsequently, it is easy to observe and analyze the motion of the hailstone that has fallen at the (1) part.

Besides that, the goal is to create a device for mass production with inexpensive and accessible sensors and electrical modules.



(1) – The solid plane where a hailstone should hit. (2) – The metal part that can be deformed. (3) – Heavy firm material.