# ANALYSIS OF THE NUMBER OF MUONS DETECTED BY A TIMEPIX DETECTOR ACCORDING TO ITS ORIENTATION

-Design and construction of an orientation device adapted to a Timepix detector-

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Introduction:

- Everything arises from the interest in particle physics and the opportunity to work with a Timepix detector.
- The most important goal was to create a device to turn a MiniPix detector up to 90 degrees and study the appearance of muons depending on the inclination.
- Our hypothesis was that the greater the inclination the greater the appearance of muons.
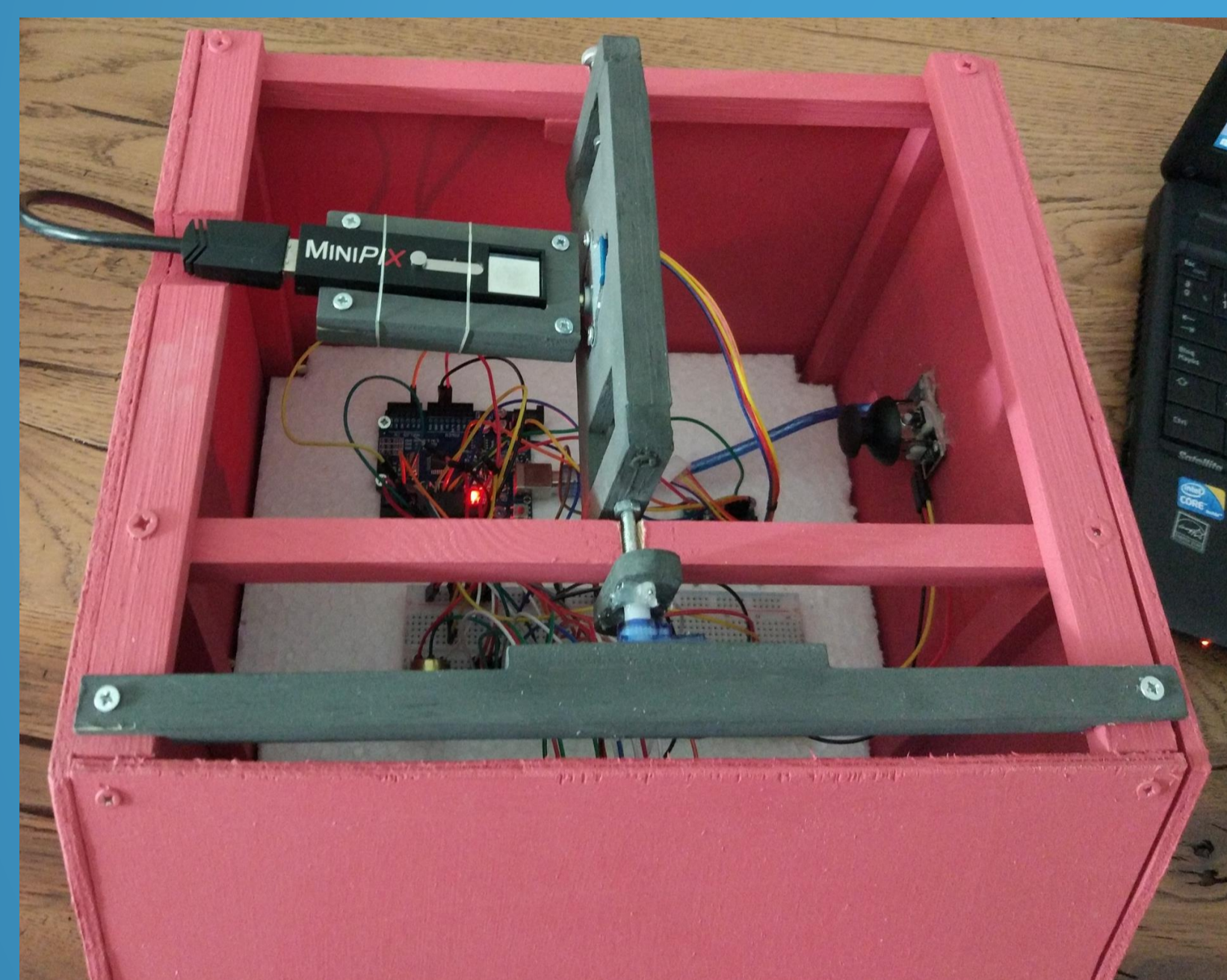
Materials:

- Arduino Kit (the most important pieces to be able to perform the data analysis later were: the servomotor and the LCD screen
- A Timepix detector (provided by the CERN) together with their respective program to analyze the data.
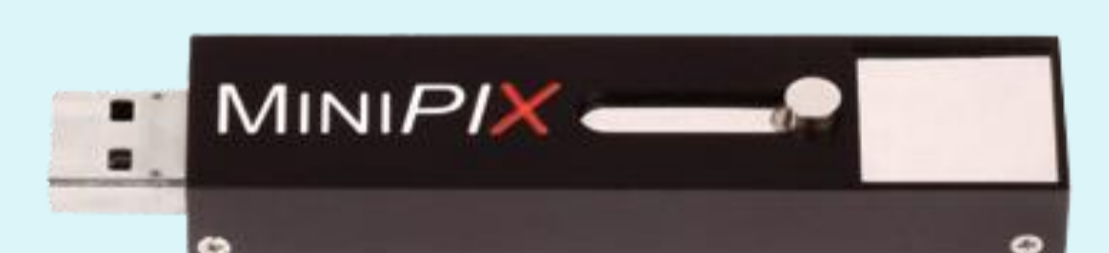

Methods:

1. Creation of the machine:

- Design of the machine with a support to place the detector.
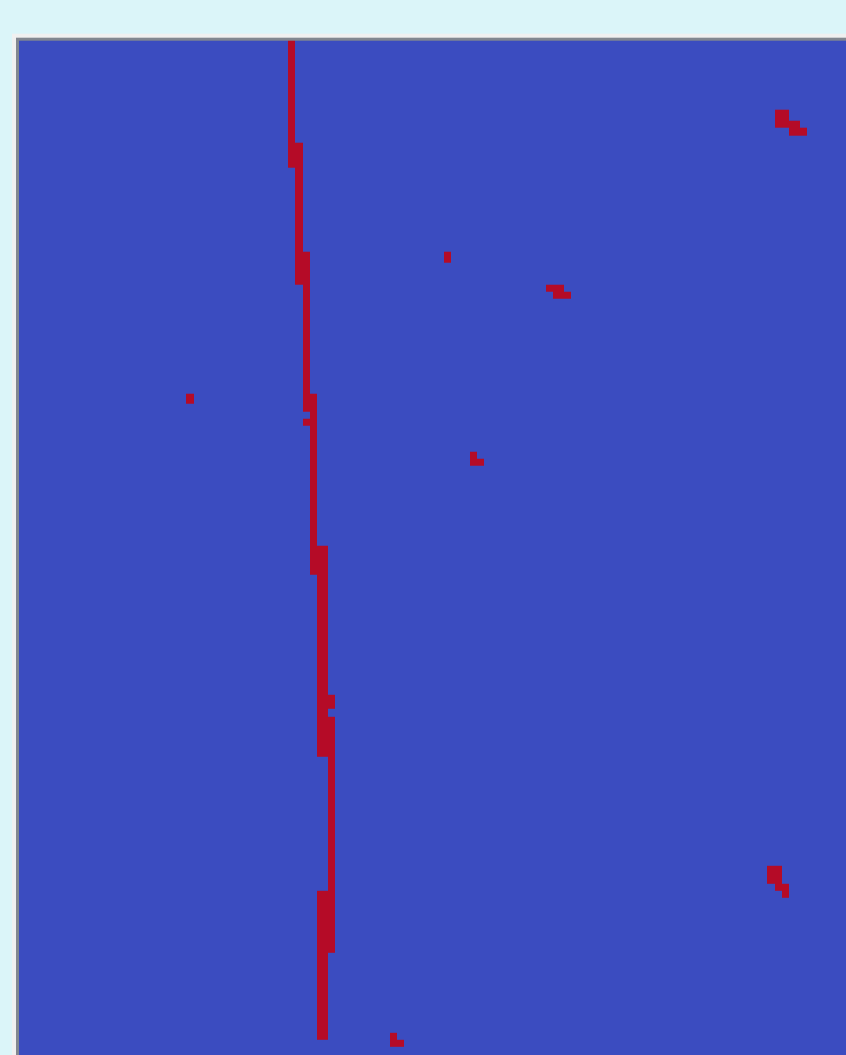- Create a program with Arduino so that the detector could rotate 15 degrees every hour.

2. Data analysis:

- Learn to use the detector software.
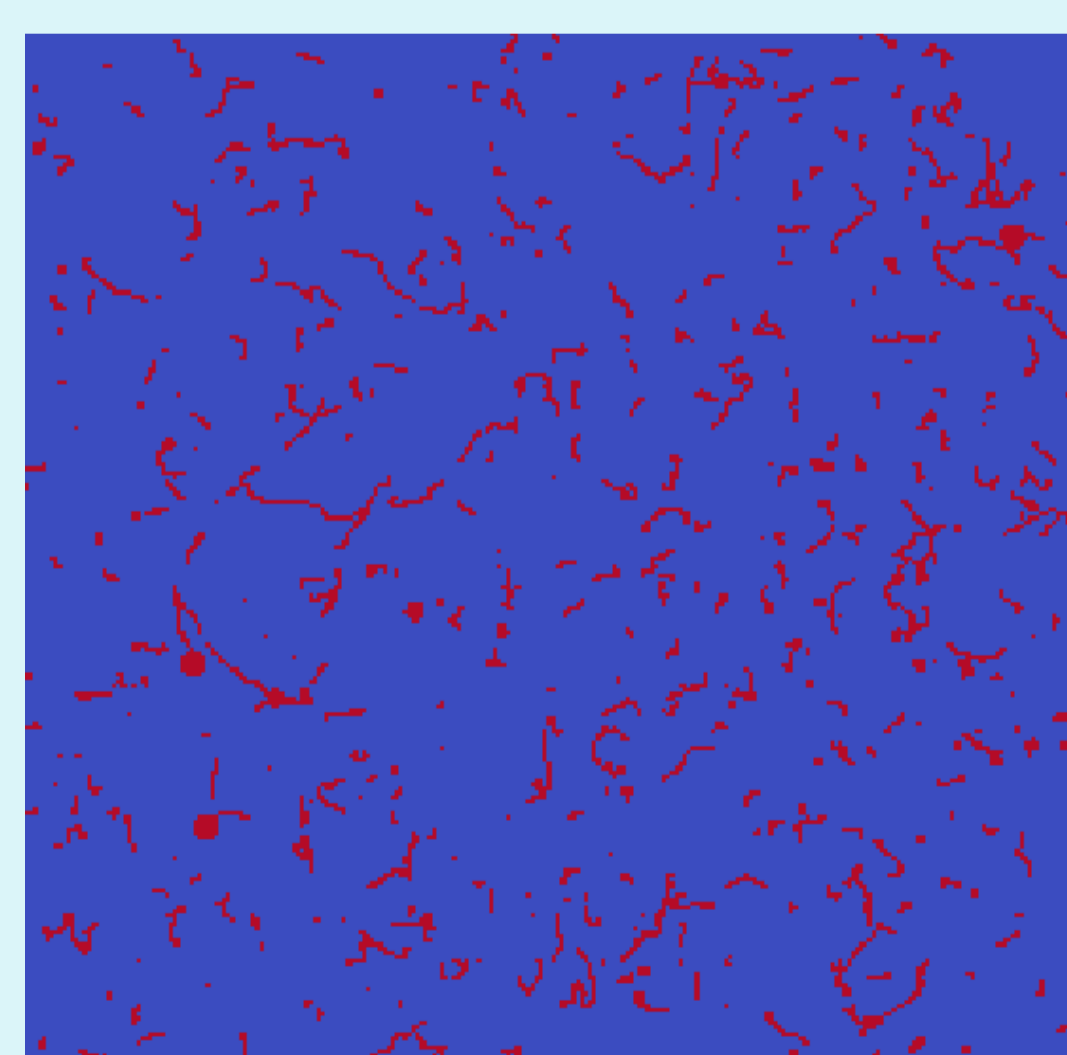- Study and analyze all the measures in the different inclinations
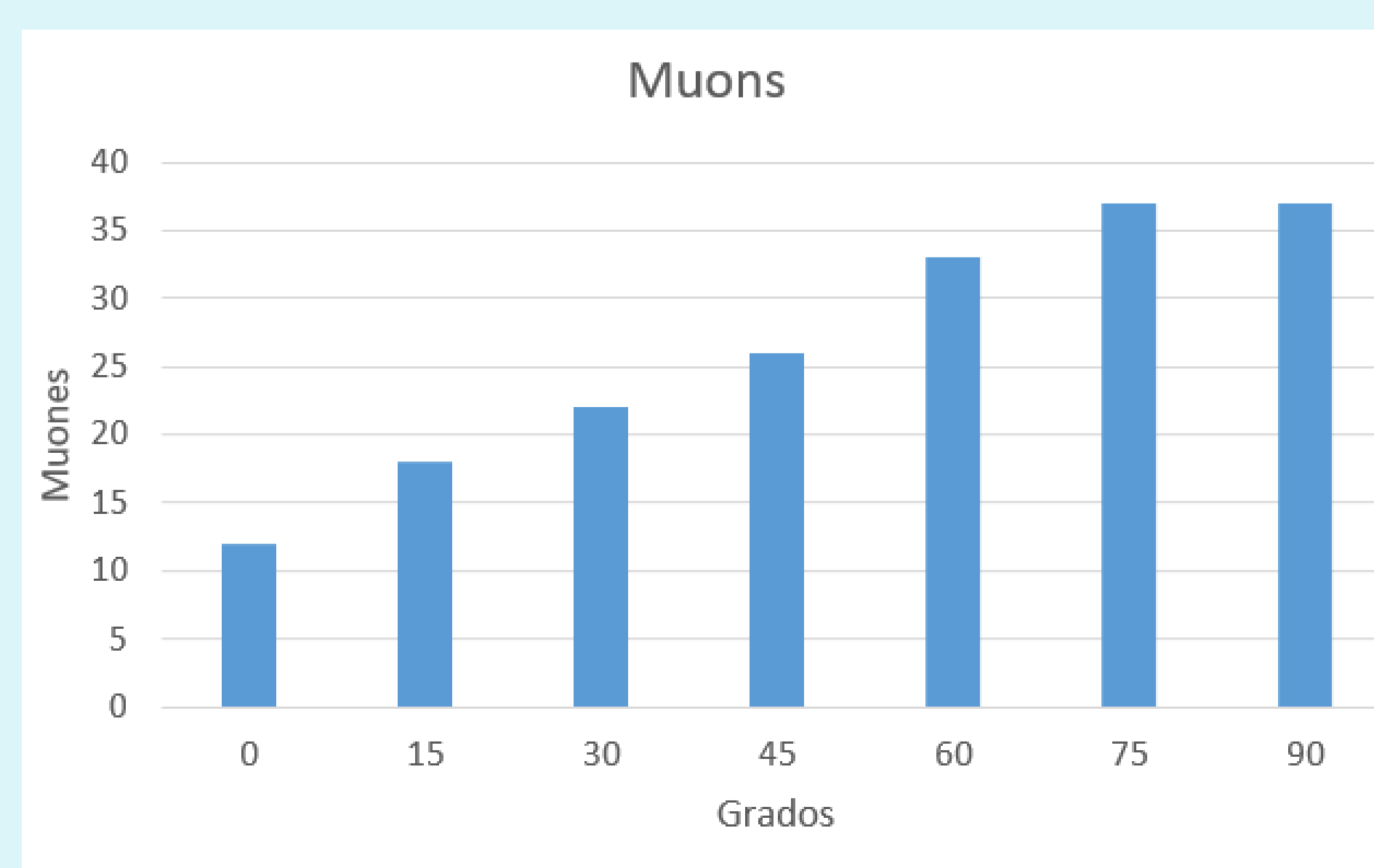

Results:

- After analyzing the data, the results obtained were the following:

Muon   Alpha beta and gamma

Muons

Conclusions:

- The greater the inclination of the detector, the greater the appearance of muons.
- We obtain this data since the amount of muons we receive from the cosmic rays in vertical trajectory is much larger than in horizontal.

Webgraphy:

- http://dataserver.researchinschools.org/
- https://www.arduino.cc/en/Reference/DataSheets