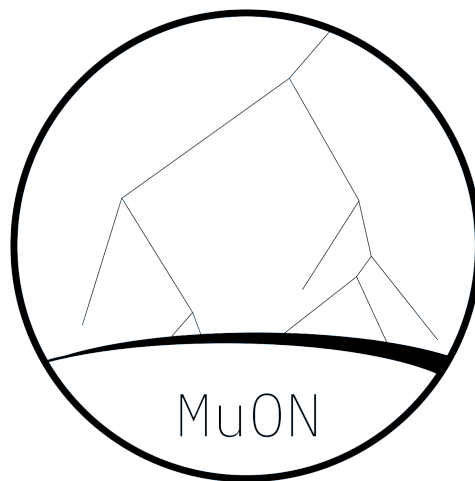


MuON

What we do and how to Participate



MuON SFN-Kassel & SFN-D

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What we do

The MuON research-programme aims to investigate the properties of cosmic muons over an extended amount of time to be able to better understand how these particles are produced and how they are influenced by other factors. Muons are subatomic particles and are mostly found in the secondary cosmic radiation, where they are a product of other particles from the primary cosmic radiation colliding with the atoms of the atmosphere. Sources of primary cosmic radiation are, for instance, the sun and other parts of the galaxy. Investigating the correlations between muon flux and cosmic events such as coronal mass ejections (CMEs) will enable researchers to e.g. further understand space-weather, which plays an important role in space flight and astro-particle physics. Our plan to achieve this goal is to establish a network of measuring stations across the globe by having our detectors placed in different locations by any partner that wishes to support us.

With the detectors we measure the counts and energy of muons reaching earth's surface and with an upcoming version we will also be able to determine their trajectory.

The data we get this way will be analysed to evaluate an overall average of mentioned properties as well as to find patterns in the behaviour of muon appearance regarding time, location, or other possible influences like solar activity.

We plan to make the results of our analysis publicly accessible in various forms on our website (<http://muon-sfn.org>) to create a basis for others to extend their research about muons more effectively using this first-of-its-kind detector network.

How you can join

As partners for our project, we are looking for anyone who is willing to participate in the investigation of cosmic muons, as the first goal is to set them up in as many different locations as possible. We are especially looking forward to working with larger institutions or fellow keen researchers, but we also like to work with any hobbyist or school that wants to contribute to our efforts. A project member will have to satisfy the small number of requirements for our detectors, which are explained below, but are easy to fulfill. We are currently planning on a system that allows every member to download all the raw and unprocessed data that is generated by the detector in their location, so they can do whatever they like with it, for example, teach students how to work with big amounts of raw data and they can learn how to process them by themselves.

Setup and Requirements

The detectors themselves are small in dimension and can thus easily be set up in terms of space. The main requirements are a constant source of power as well as a stable internet connection (preferably Ethernet, but wireless is possible as well).

The setup itself is quite self-explanatory and a list of all requirements and recommendations for setting up a detector will be sent to anyone interested. We are happy to support you in the process of setting up the detector, if you have any questions. Once the detector is set up and running, it will not need any maintenance and you do not have to worry about any further work.

Funding and Deployment

Since we are looking forward to anyone who wants to participate, we have decided to not charge any money for the detectors. Every detector unit will be funded by the SFN-Deutschland (SFN Schülerforschungsnetzwerk gGmbH) and the Hübner&Kennedy Foundation (Stiftung Hübner und Kennedy gGmbH) and is assembled, provided and maintained by the MuON Collaboration. If any problem with one of the detectors occurs, we will take care of it as good as we can. When the period of operation will eventually end (which is currently not planned), you can decide whether you want to return or keep the detector. We are also providing an API you can use to connect the Detector to you own Database once it is not a part of the Detector-Network anymore.

If you or your organisation are interested in participating or have any questions, please contact us via muon.research@gmail.com to receive further information.

We are looking forward to welcoming you as a member of the MuON Cooperation.