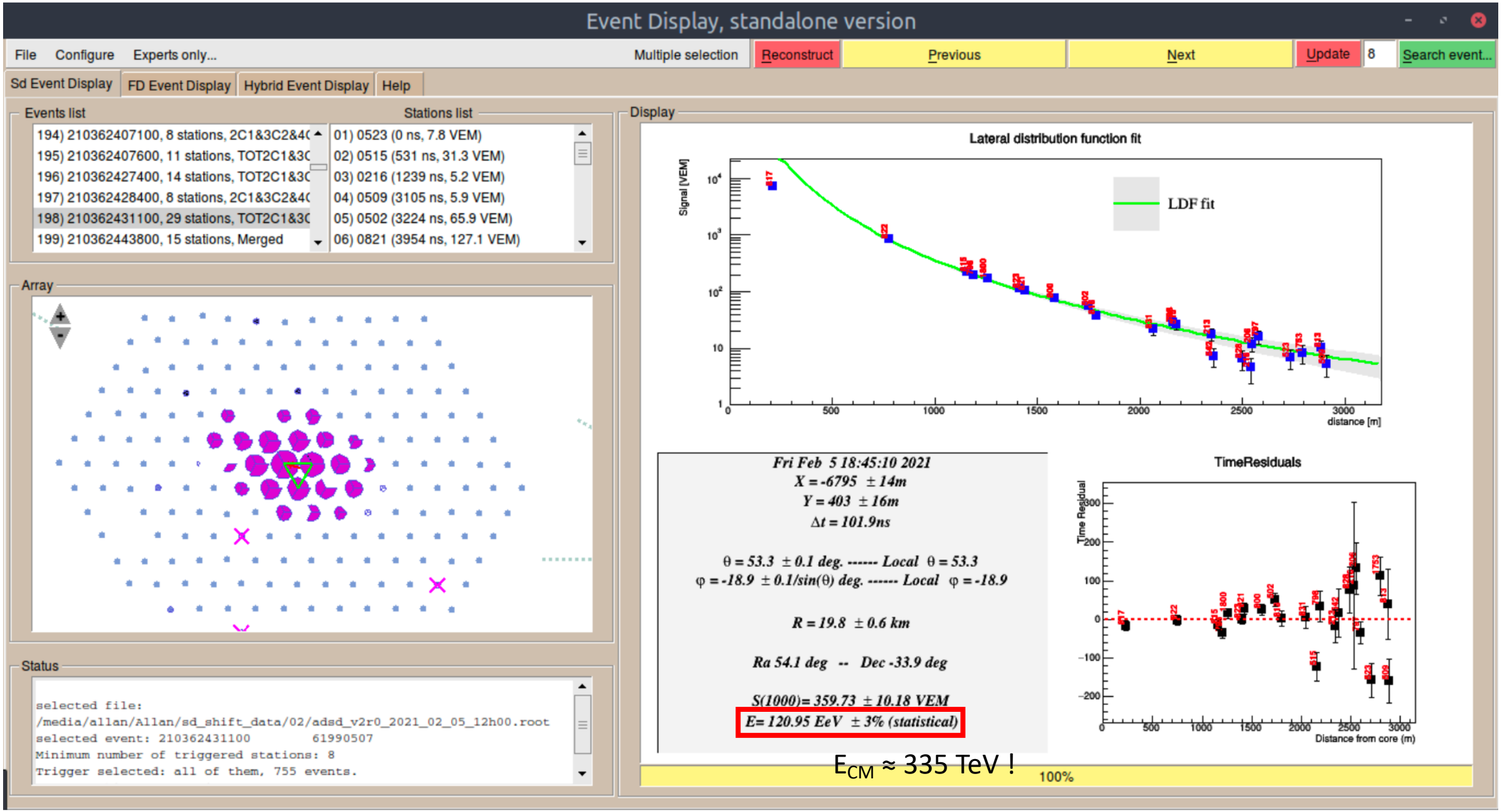
PIERRE AUGER OBSERVATORY

Mohit Saharan



$E_{CM} \approx 335$ TeV !

February 15, 2021

Dataset | Open Access

Pierre Auger Observatory 2021 Open Data

The Pierre Auger Collaboration

The Pierre Auger Collaboration is releasing 10% of the data recorded since 2004 using the world's largest cosmic ray detector, the Pierre Auger Observatory, located in Argentina, in the Province of Mendoza. These data are being made available publicly with the expectation that they will be used by a wide and diverse community including professional and citizen-scientists and for educational and outreach initiatives.

Operation of the Pierre Auger Observatory, by a Collaboration of about 400 scientists from over 90 institutions in 18 countries across the world, has enabled the properties of the highest-energy cosmic rays to be determined with unprecedented precision. These cosmic rays are predominantly the nuclei of the common elements and reach the Earth from astrophysical sources. The data from the Observatory have been used to show that the highest-energy particles have an extra-galactic origin.

Cosmic rays are observed indirectly, through extensive air-showers of secondary particles produced by the interaction of the incoming cosmic ray with the atmosphere. The Surface Detector of the Observatory covers 3000 km² and comprises an array of particle detectors, separated by 1500 m. The area is overlooked by a set of telescopes that compose the Fluorescence Detector which is sensitive to the auroral-like light emitted as the air-shower develops, while the Surface Detector is sensitive to muons, electrons and photons that reach the ground.

The Open Data released here include those from these two instruments. They have been subjected to the same selection and reconstruction procedures used by the Collaboration in recent publications. They amount to more than 20000 showers measured with the surface-detector array and more than 3000 showers recorded simultaneously by the surface and fluorescence detectors. Data are available as pseudo-raw (JSON) format and as a summary CSV file containing the reconstructed shower parameters. Simplified codes derived from the ones used for published analyses are also provided, by means of Python notebooks that have been prepared to guide the reader to an understanding of the physics results. To get more details about the Observatory and the Open Data, you can visit the dedicated website.

About the Auger Open Data

Downloadable datasets

- Pseudo-raw data: For each event, a list of SD stations, with their relevant PMT traces, is available. If an event is detected simultaneously with the SD and FD it is called a ***hybrid event*** and a list of FD telescopes with a camera view is also provided. The main parameters from the SD and FD reconstruction are also given.
- Reconstructed data: for each event, only 'high-level' information is provided. Different parameters are extracted from the pseudo-raw dataset to be used in physics analysis.
- Auxiliary data: these are extra data necessary for a full physics analysis but that are not extracted directly from the raw data. They include the position of the SD stations, the position of the FD pixels, the SD exposure, the FD acceptance.

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Versions

Version 1.0.0 — Feb 15, 2021
10.5281/zenodo.4487613

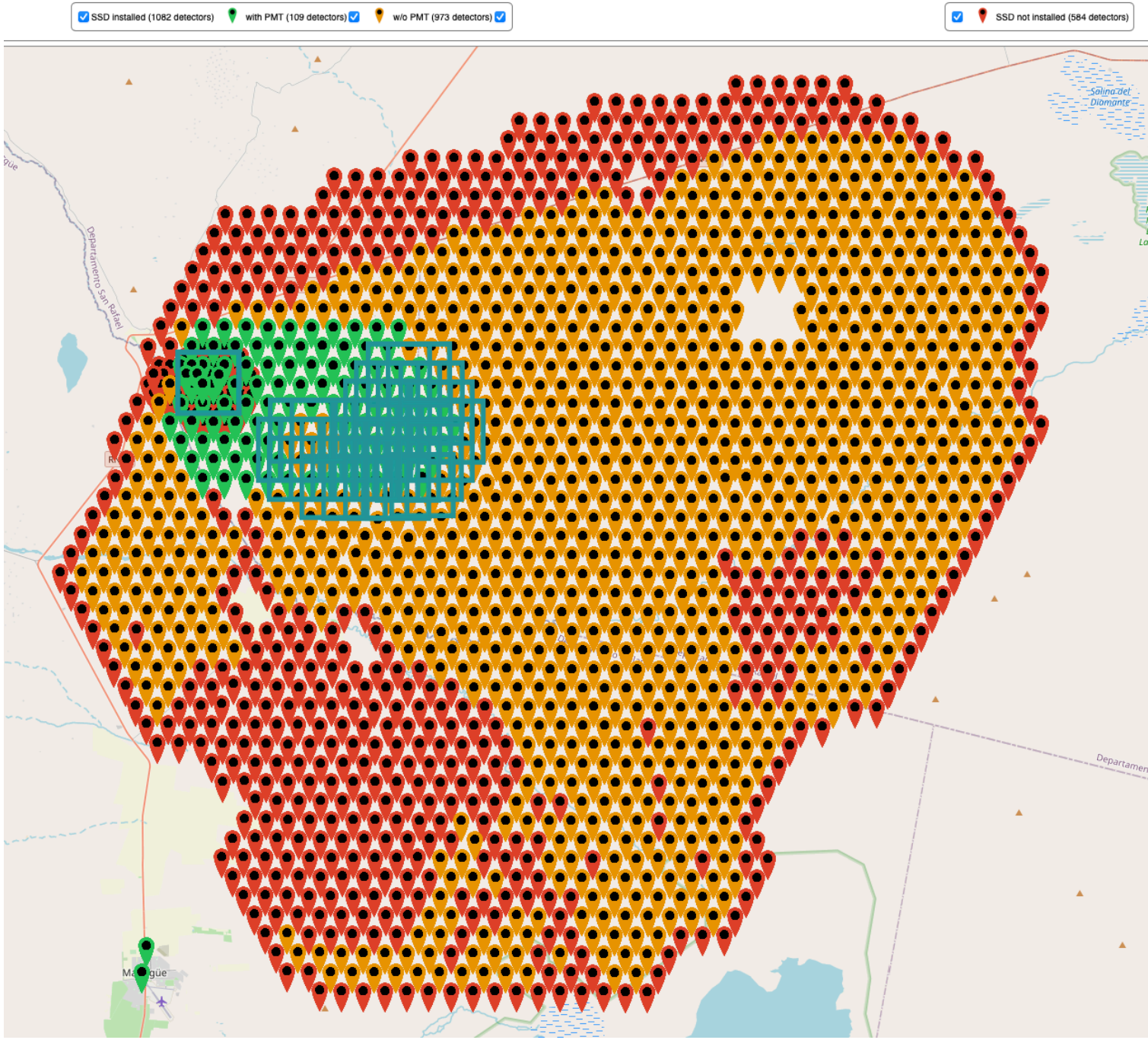
Cite all versions? You can cite all versions by using the DOI 10.5281/zenodo.4487612. This DOI represents all versions,

Auger SD+SSD

- 1329/1518 SSD modules in Malargüe
- At least 1410 modules needed (leaving outer ring free)

- New front-end electronics: 2000 boards in production, 31 installed in Malargüe

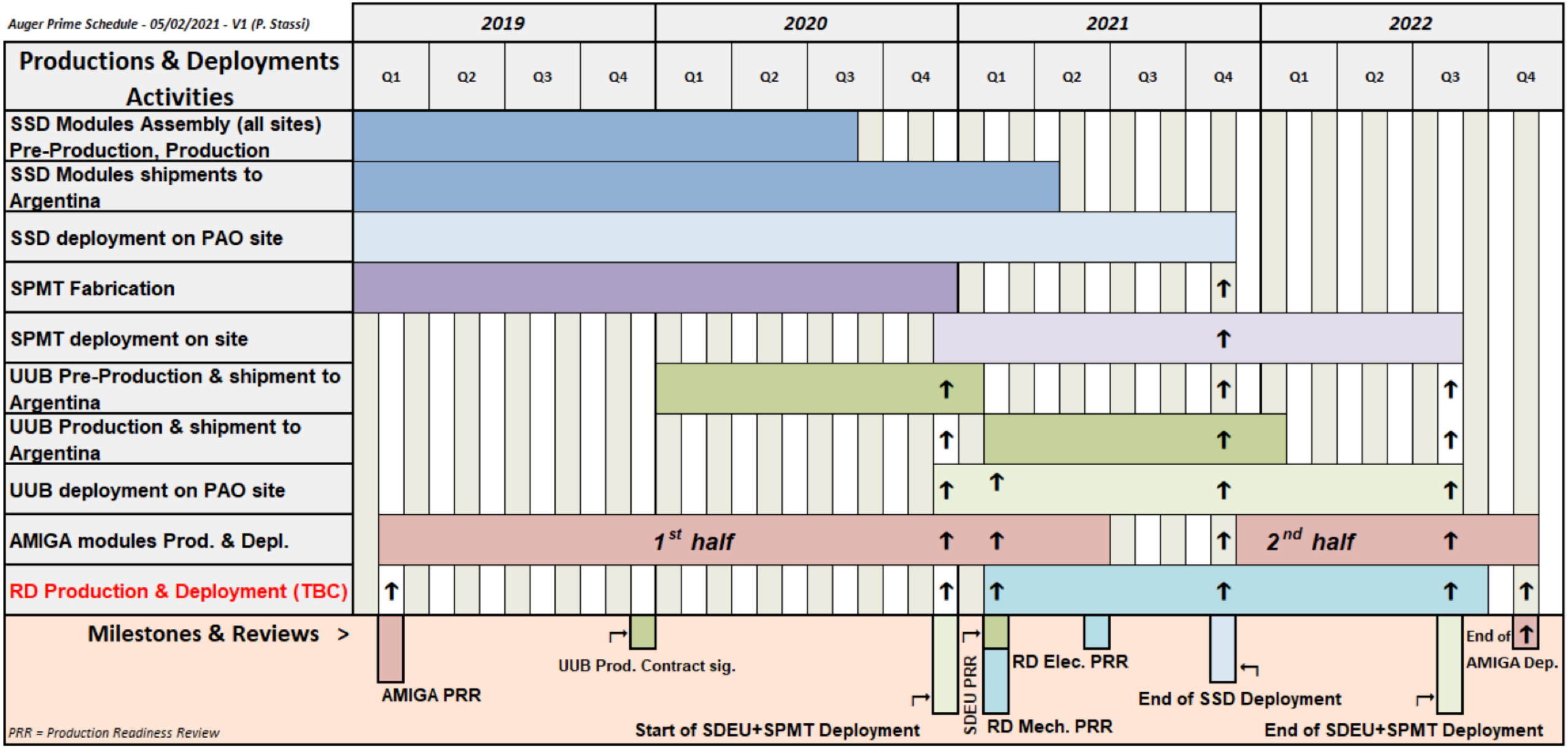
- 1550 small PMTs ordered and are being fabricated



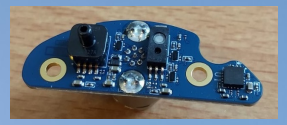
Auger RD

- (Small) Engineering Array in the field since November 2019, performs as expected
- Final design nearly finished, acquisition quotes all in
- Few stations with final mechanics and electronics
  in the field soon
- Expect PRR end of March 2021, then place all orders

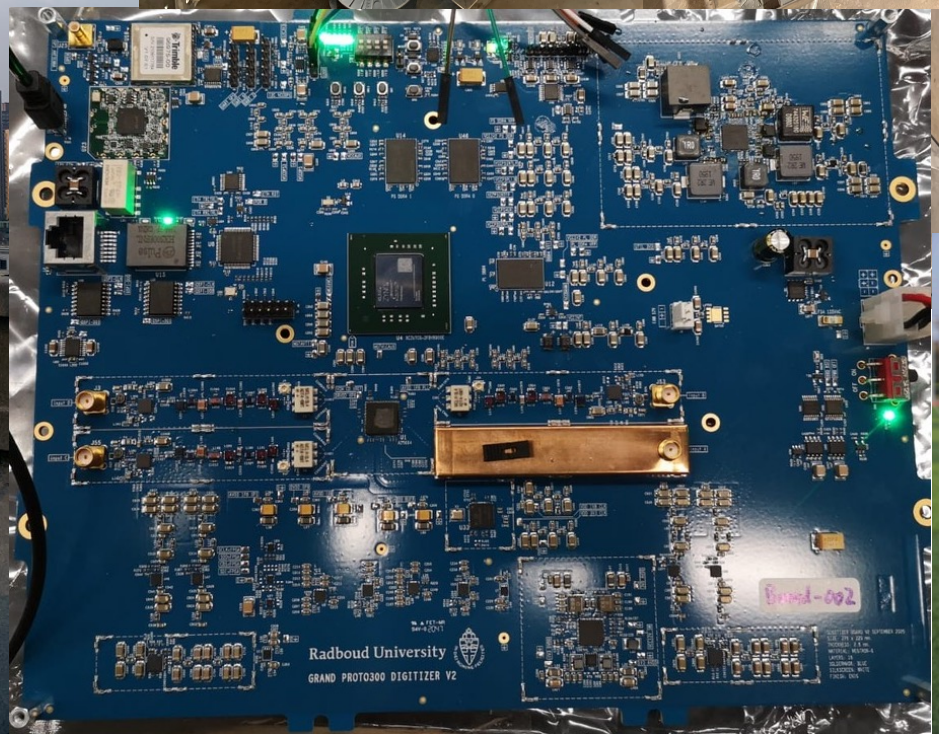
AugerPrime deployment (looking for more resources to speeds it up)



GRAND



- 100 Antennas and mechanical structures completed
- Only component to be bought: solar panels
- Station electronics to be delivered this month
- 100 vibration sensor cards produced, in Nijmegen for calibration



CAN

25th Symposium on Astroparticle Physics in the Netherlands, 25/26 March 2021, ZOOM

25-26 March 2021
Europe/Amsterdam timezone

https://indico.nikhef.nl/event/2988/

- Overview
- Scientific Programme
- Call for Abstracts
  - View my Abstracts
  - Submit Abstract
- Book of Abstracts
- Registration
  - Modify my Registration
- Participant List

Support

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The annual meeting of the Dutch astroparticle physics community will be held this year as a two-day symposium on 25 and 26 March 2021 via ZOOM and gather.town. This will be the 25th symposium of a series which started in the year 2004. The meetings are organized by the Committee of Astroparticle Physics in the Netherlands - CAN. The edition of the symposium will take a slightly different form from previously: there will be one key-note address, updates of the five pillar programmmes of the Dutch astroparticle physics strategy, a few contributed talks and an open floor for all participants to introduce themselves and their ideas in short flash talks.
Contributions can be indicated on the registration.

This meeting is supported by Nikhef and NOVA and this year free of charge.

More info, details and a draft programme will follow soon.

Starts 25 Mar 2021 09:30
Ends 26 Mar 2021 16:00
Europe/Amsterdam

Dr. Weniger, Christoph
Freise, Andreas

No material yet

https://mailman.nikhef.nl/mailman/listinfo/astroparticlephysics