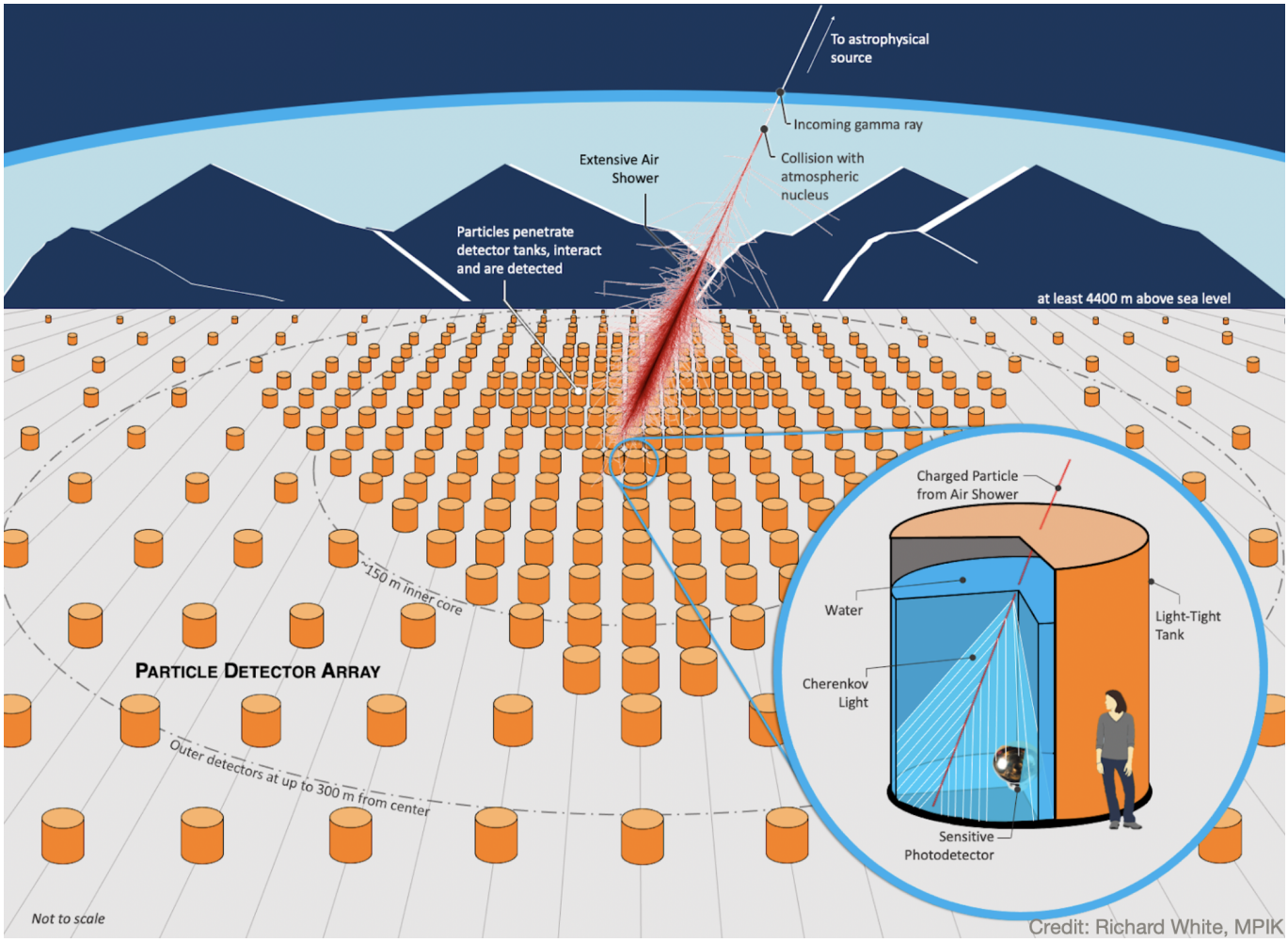
The Southern Wide-field Gamma-ray Observatory (SWGO)

The scientific potential of a wide field of view, and very high duty cycle, ground-based gamma-ray detector has been demonstrated by the current generation instruments HAWC and ARGO and will be extended in the Northern hemisphere by LHAASO. No such instrument exists in the southern hemisphere, where great potential exists for the mapping of large scale emission as well as providing access to the full sky for transient and variable multi-wavelength and multi-messenger phenomena. Access to the Galactic Centre and complementary with the major facility CTA-South are key motivations for such a gamma-ray observatory in the south. There is also significant potential for cosmic ray studies, including anisotropy.

The shared concept for the future observatory is as follows

- A gamma-ray observatory based on ground-level particle detection, with close to 100% duty cycle and order steradian field of view.
- Located in Atacama Astronomical Park, Chile.
- At an altitude of 4770 m.
- Covering an energy range from 100s of GeV up to the PeV scale.
- Based primarily on water Cherenkov detector units.
- With a high fill-factor core detector with area considerably larger than HAWC and significantly better sensitivity, and a low density outer array.



NEWS

May 2026: 14th Collaboration Meeting

From May 4th to 7th, 2026, members of the SWGO Collaboration gathered in Lisbon, Portugal, for the 14th Collaboration Meeting. The meeting brought together researchers from across the collaboration to review recent scientific and technical progress, coordinate ongoing activities, and discuss future developments for the observatory and its science program.



September 2025: 13th Collaboration Meeting

From September 30th to October 3rd, 2025, members of the SWGO Collaboration convened on the island of Ischia, near Naples, Italy, for the 13th Collaboration Meeting. The event brought together researchers from across the collaboration to discuss recent progress, ongoing projects, and future plans for the observatory.

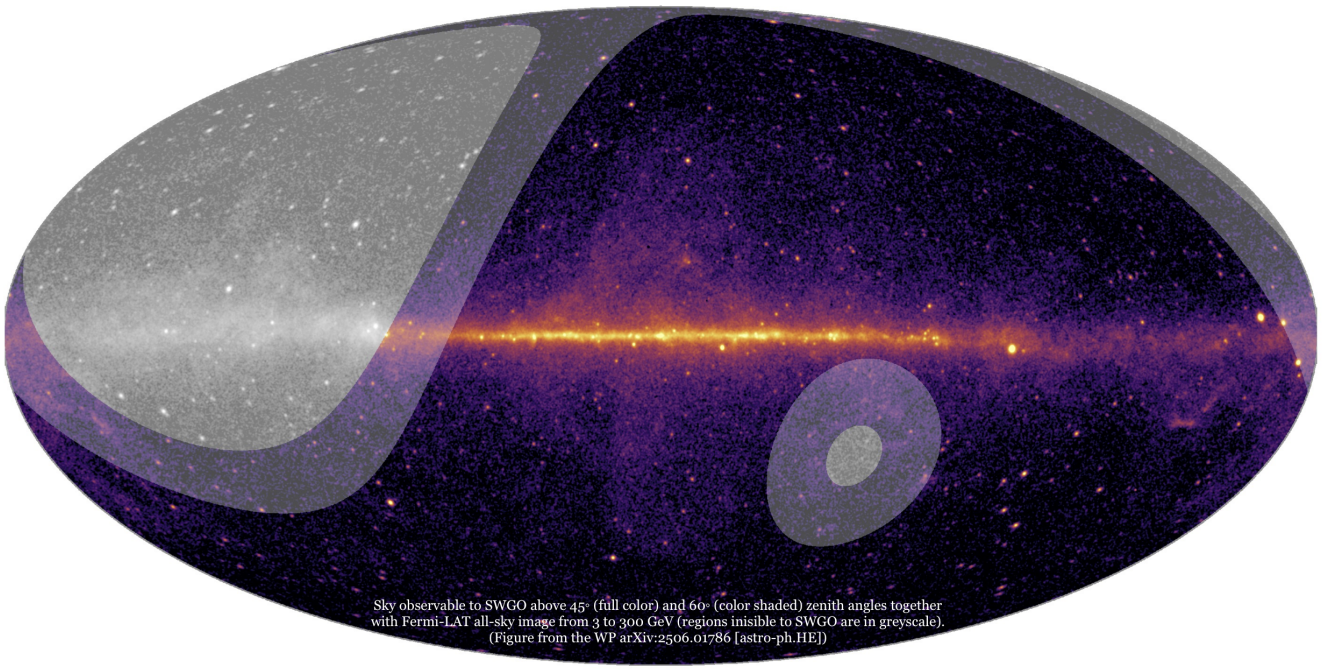


Science White Paper is out!

June 3rd, 2025

Big news – our new science white paper is out, marking a major milestone as we wrap up the development phase and move toward construction in Chile. The paper outlines the baseline design and scientific goals of SWGO and its initial phase, SWGO-A, highlighting its potential to revolutionise our understanding of cosmic-ray physics, dark matter, and multi-messenger astronomy. Positioned near the CTA Observatory, SWGO will play a vital role in the next decade of high-energy astrophysics.

Dive into the future of gamma-ray science with us! https://arxiv.org/abs/2506.01786



Sky observable to SWGO above 45° (full color) and 60° (color shaded) zenith angles together with Fermi-LAT all-sky image from 3 to 300 GeV (regions inisible to SWGO are in greyscale). (Figure from the WP arXiv:2506.01786 [astro-ph.HE])

May 2025: 12th Collaboration Meeting

From May 5th to 9th, members of the SWGO Collaboration gathered in San Pedro de Atacama, Chile, for a milestone meeting — the first held in the host country since the site was finalised last summer.



The meeting focused on key technical discussions and operational planning, with members actively shaping the roadmap towards near-term milestones. In addition to the scientific and logistical sessions, Collaboration members also engaged with key external stakeholders, including representatives from local communities, government bodies, and the education sector — such as students and teachers.

Topics discussed ranged from tank production options, infrastructure needs, and funding strategies to the role of the local workforce and educational opportunities. The agenda also included visits to regional astrophysics facilities, including the Atacama Large Millimeter/submillimeter Array (ALMA), fostering further exchange and collaboration.

SWGO members and guests visit the site!



SWGO members and guests made a trip to the project site in **Pampa La Bola**, Chile, during the 12th collaboration meeting in San Pedro de Atacama, the town closest to it. Located in the Antofagasta region at an altitude of 4,770 meters and inside the Atacama Astronomical Park, it is close to other astronomical observatories and facilities, including the Atacama Large Millimeter/submillimeter Array (ALMA).

Harm Schoorlemmer receives ERC Consolidator grant

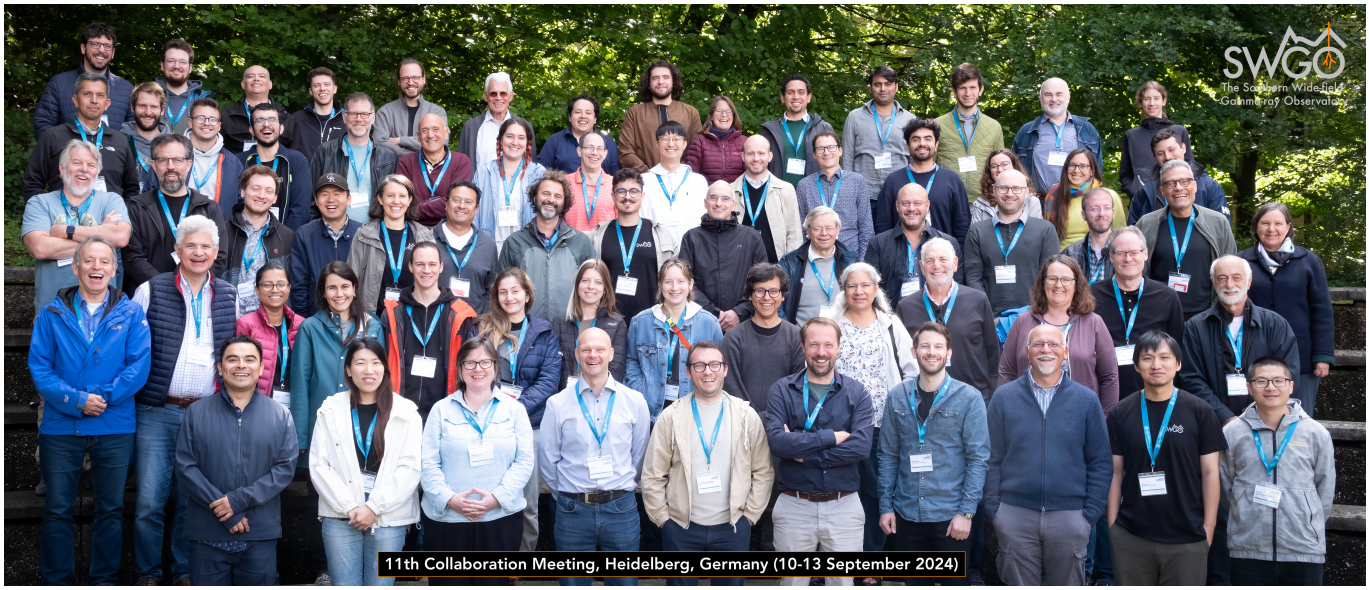
December 4th, 2024

Working-group coordinator for SWGO's analysis and simulations, Harm Schoorlemmer, from Nikhef, the Dutch National Institute for Subatomic Physics, was recently awarded an ERC Consolidator Grant (3 million euros) for his research proposal titled 'Air shower interferometry to advance astroparticle physics'. He developed a new technique that applies interferometry on the radio emission from air showers, thereby combining two detection techniques – radio antennas and high-altitude water Cherenkov detectors. This would greatly improve the reconstruction accuracy of air shower properties and allow for better determination of the features of cosmic particles, and has the potential to be implemented into the SWGO array.

Congratulations, Harm!

Read more here:
https://www.nikhef.nl/en/news/nikhef-researcher-harm-schoorlemmer-receives-erc-consolidator-grant/

September 2024: 11th Collaboration Meeting



After the site selection in Pampa La Bola, Chile, the collaboration has gained a whole new momentum! It will be neighbours with the southern array of the Cherenkov Telescope Array Observatory (CTAO), complementary to and synergetic with its scientific aims in exploring the sky in gamma rays.

This was clearly demonstrated at the collaboration meeting that was held at the Max Planck Institute for Nuclear Physics (MPIK) in Heidelberg, Germany from 10th to 13th September 2024, where scientists and students fro around the world attended both, in person as well online, to discuss

- detector and site development,
- simulations and science analyses,
- collaborations with on-site personnel and international funding agencies, and
- making positive impacts in the local communities!

Kudos to everyone for all their efforts! And a special shoutout to our spokespersons as well as the incredible local organising committee at the MPIK for putting together everything. There's a lot to look forward to – stay tuned!

SWGO SITE SELECTION

August 12th, 2024



At a meeting at the Brazilian Center for Physics Research (CBPF), in Rio de Janeiro, Brazil, scientists of the SWGO Project, whose goal is to observe the sources of very-high-energy gamma rays in the Universe, announced that the Atacama Astronomical Park in Chile was selected as the site of the observatory.

Please find more information at the **SWGO site selection press release** here.

May 2024: Major Milestone Completed



For the R&D phase of SWGO we defined nine milestones. Today, 3rd May 2024, we ticked Milestone 6, having agreed on a design consolidation: greatly reducing the phase space for the final optimisation of the SWGO design. SWGO will be composed of an inner array with a fill-factor of >40% and excellent low energy performance, but also an outer array with lower fill factor but an area of 0.5-2.0 square kilometres, providing a science reach in to the PeV domain. The inner array will be based on dual-layer water Cherenkov detectors with diameter between 3.8 and 5.5 metres. Multiple options are still being explored for the outer array.

This is a big step for the collaboration, based on a huge simulation and analysis effort as well as detector design development and evaluation of our benchmark science cases.

Our next Milestone is the selection of the SWGO Site – stay tuned!

(The picture is from our recent collaboration meeting in Mexico City, where our discussions paved the way for this new Milestone.)

October 2023: 9th Collaboration Meeting



From October 1st to 4th, 2023, the SWGO Collaboration meets in Prague, Czech Republic, for the 9th Collaboration Meeting.

We engaged in insightful presentations regarding the work done so far and useful discussions of the forthcoming steps, both with the present attendees and individuals connecting from different parts of the world. Thanks to everyone for attending or joining at unconventional times.

April 2023: 8th Collaboration Meeting



From April 16th-20th, 2023, the SWGO Collaboration meets in Rio de Janeiro, Brazil, for the 8th Collaboration Meeting. We had wonderful and fruitful presentations and discussions on the work done so far and the next steps still to be taken by the different working groups, Institutions, and collaborators worldwide. Thank you all for making this hybrid experience a reality!

April 2023: CLAF/MCTI High-Level Seminar

Centro Latinoamericano de Física
Centre Latino-Américain de Physique
Centro Latino-Americano de Física

UNESCO
Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura

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"Opportunities for the Latin-American Participation and Cooperation in Astroparticle Physics and the SWGO Project

- 20 April 2023, Rio de Janeiro, Brazil.

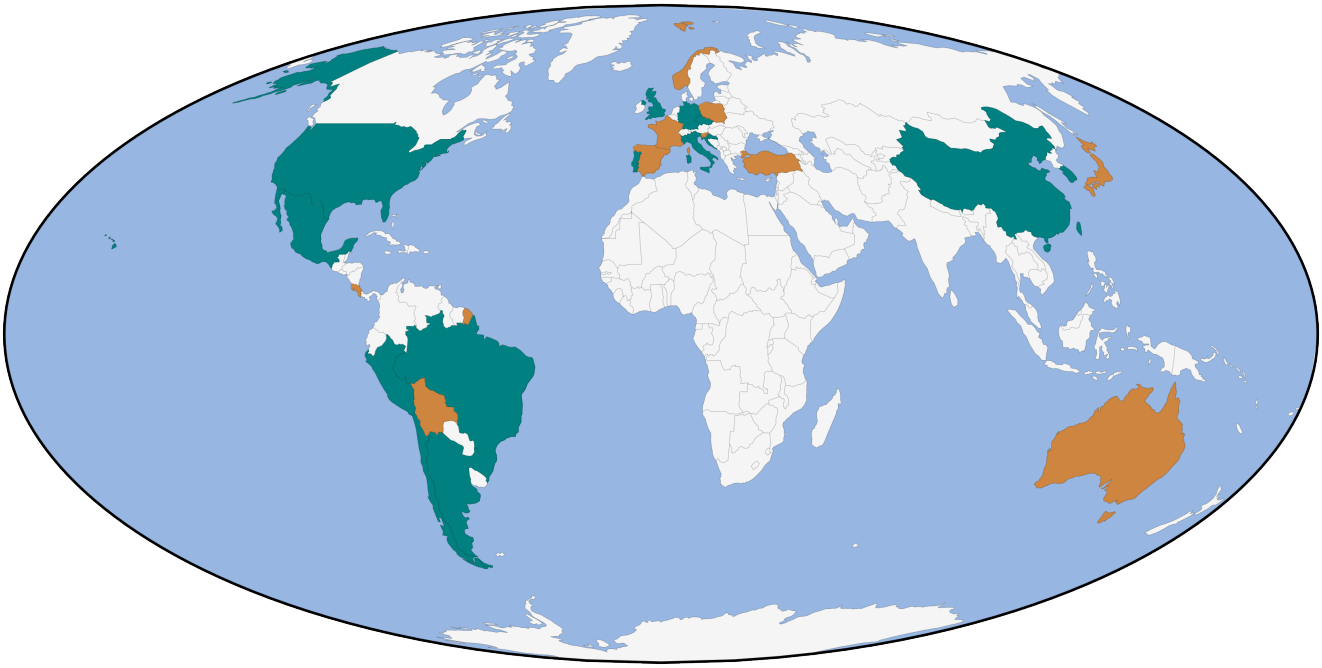
The Latin American Center for Physics (CLAF) was founded in 1962 and last year celebrated its sixtieth anniversary. Among the initiatives to take stock of these six decades of contributions to the promotion and development of physics in the Latin American continent, was the creation of the Astroparticle Physics Unit, to support CLAF in actions targeted specifically towards this field of scientific investigation.

The seminar intends to facilitate constructive dialogue between policy-makers and key stakeholders from different sectors of government, academia, and industry, among others, to address broader perspectives and opportunities of participation and cooperation in Astro-particle Physics and the future SWGO project.

Please find more information and the Press Release here.

Oct 2022: New partner countries

We are delighted and happy to welcome China and Croatia to our team as two of the now fourteen partners. We look forward to joining efforts to carry out this great project and generate new and exciting outcomes, welcome!



For the latest collaboration map, visit here.

Sep 2022: 7th Collaboration Meeting

From Sep. 19 to Sep. 23, 2022, the SWGO Collaboration met online to share and discuss the progress in several ongoing tasks for the observatory to be built. We welcome all the new Collaborators, and thank you all for such a fruitful Meeting!



May 2022: Collaboration Meeting

From May 23rd to May 27th, 2022, the SWGO Collaboration met to discuss the progress in several

ongoing exciting tasks. The science benchmarks, the detector options, the potential sites for the observatory to be built, and the improvement in analysis and simulations. We will be looking forward to meeting again!



In Memory of Prof. Ronald Cintra Shellard (1948 – 2021)



With profound sadness we announce the passing of our dear colleague, Prof. Ronald Cintra Shellard, on 7 Dec 2021. Born in São Paulo, Prof. Shellard was a pioneer and leader in the fields of particle and astroparticle physics in Brazil, whose impact is hard to quantify. For over 30 years he had a central role in their development in the country and, most notably, was instrumental in promoting Brazil's collaboration with CERN.

Our thoughts are with his family, friends and colleagues in Brazil, and all over the world.

Please find the obituary here.

March 2021: New Vice-Spokespersons for SWGO

The SWGO Collaboration is delighted to announce that the Spokesperson team is now complete! Petra Huentemeyer, from the Michigan Technological University, US, and Ulisses Barres de Almeida, from the Centro Brasileiro de Pesquisas Físicas, Brazil, have been appointed as Vice-Spokespersons of the collaboration. They will work together with the spokesperson, Jim Hinton, MPIK, Germany, over the next 1-2 years to guide the R&D phase of SWGO.





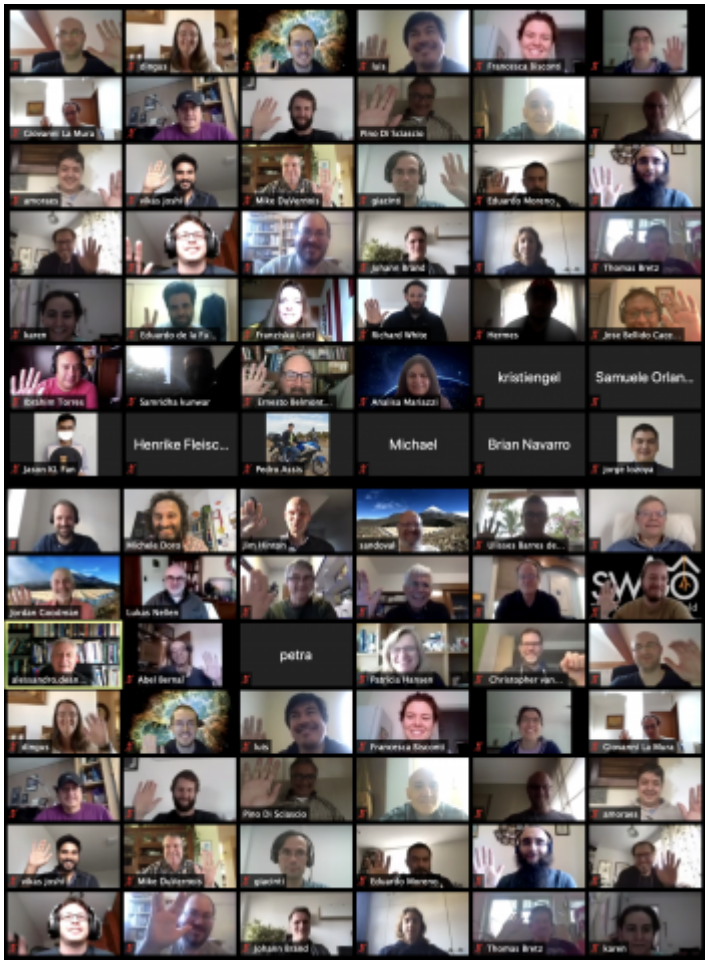
November 2020: 3rd Collaboration Meeting

The SWGO members met online for the third collaboration meeting, held on November 4-10, 2020.



May 2020: Remote Collaboration Meeting

Last week, from May 11th to May 15th, 2020, the SWGO Collaboration met virtually to discuss the advancements in the several ongoing activities. Our science benchmarks, the progress in simulations, the different detector options, and the possible sites for the observatory were the highlights of this meeting. We look forward to meeting face to face soon!



First Collaboration Meeting

The SWGO Collaboration members met all together for the first time at the Padova Astronomical Observatory, Italy, on October 30th–31st 2019. During the meeting, there were wide-ranging discussions on different detector concepts, analysis techniques, simulations, and science with SWGO and connections with future observatories, sites in South America that could host the observatory, and future outreach and communication activities. The next collaboration meeting is planned to take place in Mexico City in May 2020.

Founding of a New Collaboration

On July 1st 2019, 39 research institutions from nine countries signed the agreement for the creation of a new international R&D collaboration for a future wide field-of-view gamma-ray observatory in the southern hemisphere. The aim of the collaboration is to develop, over the next three years, a detailed proposal for the implementation of such an observatory, including site selection and technology choices. The founding countries of the newly created Southern Wide-field Gamma-ray Observatory (SWGO) are Argentina, Brazil, Czech Republic, Germany, Italy, Mexico, Portugal, the United Kingdom

and the United States of America, creating a worldwide community around the project. SWGO unifies different communities that were already involved in R&D in this field. The signature of the agreement comes after a successful meeting of the scientists from the different countries, held in Lisbon in May. Press Release (English) *Gamma-ray sky image as seen with the (current) HAWC and (future) SWGO observatories (Credit: Richard White, MPIK)*

Science Case Published!

22nd February, 2019

We recently published the first version of the science case for a southern wide field-of-view gamma-ray observatory on the arXiv. The idea is that this is a living document, if you would like to contribute to the next version or want to endorse the effort let us know.

Collaboration

More information about the international R&D collaboration can be found here. If you are interested in the project and would like more information, or to get involved, please contact the Spokespersons.

Related Experiments

- The HAWC gamma-ray observatory
- LHAASO
- The Cherenkov Telescope Array
- HESS
- VERITAS
- MAGIC
- FACT

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