

# The Southern Wide-field Gamma-ray Observatory (SWGGO)

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 South America at a latitude between 10 and 30 degrees south.
- At an altitude of 4.4 km or higher.
- Covering an energy range from 100s of GeV to 100s of TeV.
- 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.

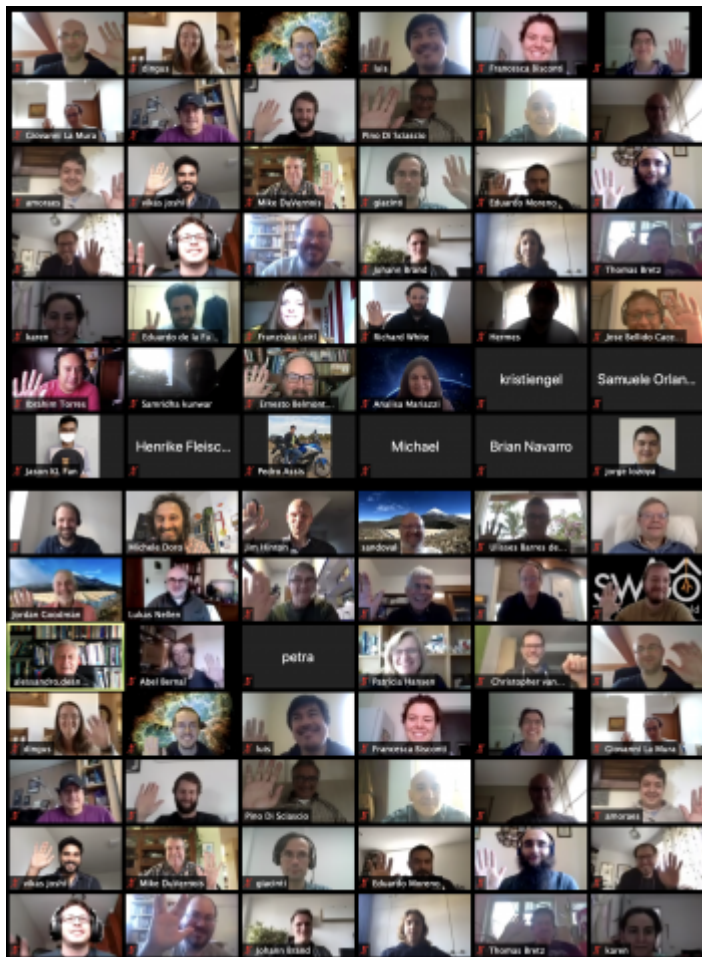


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## News

### May 2020: Remote Collaboration Meeting

Last week, from May 11th to May 15th 2020, the SWGGO 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!

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 a next version or want to endorse the effort let us know.

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## Collaboration

More information about the international R&D collaboration can be found [here](#). For more information about the project please contact the Spokesperson, [Jim Hinton](#).

If you would like to join SWGO please [send us](#) a message.

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## Workshops and Meetings

Links to past and upcoming meetings can be found at [Meetings](#).

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## Related Publications

Publication related to SWGO can be found under [Publications](#).

## Related Experiments

- [The HAWC gamma-ray observatory](#)
  - [LHAASO](#)
  - [The Cherenkov Telescope Array](#)
  - [HESS](#)
  - [VERITAS](#)
  - [MAGIC](#)
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