Communicating IceCube-Gen2



Marek Kowalski for the Gen2 Communication team

Gen2 communication team (task force)

- The Gen2 project is currently being developed full steam.
- Obtaining funding for the project will depend on properly communicating the project, as well as its goals and opportunities.
- A convincing and coherent communication to the outside needed (Target: academia, broader public & funding agencies and other decision makers.)

The communication team charge derives from these needs.

- Develop a multi-layer communication strategy
- Support Gen2 communication strategy, e.g.
 - Ensure proper representation at community meetings (e.g. Snowmass)
 - Identify and help organize public Gen2 workshops
 - Keep track of the Gen2 public material and appearance (slides, templates)
 - Assist in creating Gen2 web-sites, graphics, and other content

Current team members: Madeleine, Jean, Jim, Marek, Francis, Lu Lu, Carlos, Marcos Ex-Officio: Ignacio, Albrecht, Vivian

We are just getting started!

ICECUBE GEN2



Radio Array | Station



The project from a specialist view:

"IceCube-Gen2 will increase the annual rate of observed cosmic neutrinos by a factor of ten compared to IceCube, and will be able to detect sources five times fainter than its predecessor. Furthermore, through the addition of a radio array, IceCube-Gen2 will extend the energy range by several orders of magnitude compared to IceCube."

— Astro2020 Gen2 white paper and Astro20202 final report.



Surface Array | Station



IceCube | Laboratory

Optical Array | Sensor

ICECUBE GENZ



Radio Array | Station



Optical Array | Sensor

The project from a broader view:

As envisioned, IceCube-Gen2 will...

- resolve the high-energy sky well above energies accessible with photons.
- probe extremely high energy cosmic particle acceleration.
- reveal the sources and propagation of the highest energy particles in the universe.
- probe fundamental physics with neutrinos at energies well beyond those achievable with particle accelerators on Earth.
- increase the capability to search for mysterious elementary particles, like hypothetical magnetic monopoles and dark-matter particles.



Surface Array | Station



IceCube | Laboratory

The benefit of experience

Gen2—a roughly 10-times-larger instrument—on a budget and schedule similar to IceCube

IceCube Installation



Operating sensors in the ice since 2006, with no evidence for aging



Scintillator / radio station deployed at South Pole (2019) (PoS ID 314)

IceCube Upgrade / Gen2 Phase 1



Deployment of next generation sensors (see next slide)

Radio-Tests in Greenland

ICECUBE

GEN2



Radio technology deployed in Greenland (2021, see S. Wissel et al., PoS ID 001)



IceCube Communication

Using more channels to inform the public



Visualization of neutrino event in the IceCube-Gen2 detector. Credit: DESY, Science Communication Lab

The IceCube-Gen2 Collaboration recently wrapped up a weeklong kick-off meeting to formalize a technical design report for the project. With over 100 participants and 50 talks, the interdisciplinary workshop brought together scientists and engineers from around the world to discuss the status of design and performance requirements that will lay the foundation for IceCube-Gen2's technical specifications.

IceCube-Gen2 is the next-generation extension of IceCube, the cubic-kilometer-scale neutrino detector built at the South Pole. Since its completion in 2010, IceCube has outperformed all expectations. Some of IceCube's "firsts" include the first observation of cosmic neutrinos, first evidence of a source of highenergy neutrinos, and the first observation of a Glashow resonance event.





New <u>Gen2 brochure</u>, to be translated to different languages

AUSTRALIA University of Adelaide

BELGIUM

Université libre de Bruxelles Universiteit Gent Vrije Universiteit Brussel

E CANADA

Queen's University University of Alberta–Edmonton

DENMARK

University of Copenhagen

GERMANY

Deutsches Elektronen-Synchrotron ECAP, Universität Erlangen-Nürnberg Humboldt–Universität zu Berlin Karlsruhe Institute of Technology Ruhr-Universität Bochum RWTH Aachen University Technische Universität Dortmund Technische Universität Dortmund Universität Mainz Universität Wuppertal Westfälische Wilhelms-Universität Münster

THE ICECUBE-GEN2 COLLABORATION

JAPAN Chiba University University of Tokyo

NEW ZEALAND

REPUBLIC OF KOREA Sungkyunkwan University

Stockholms universitet Uppsala universitet

SWITZERLAND Université de Genève **TAIWAN** National Taiwan University

WRITED KINGDOM King's College London University of Oxford University of Manchester Queen Mary University of London

UNITED STATES

California Polytechnical State University Clark Atlanta University Columbia University Drexel University Georgia Institute of Technology Lawrence Berkeley National Lab Loyola University Chicago Marquette University Massachusetts Institute of Technology Mercer University Michigan State University Ohio State University Pennsylvania State University South Dakota School of Mines and Technology Southern University and A&M College Stony Brook University University of Alabama University of Alabama University of California, Berkeley University of California, Irvine

University of California, Los Angeles

University of Chicago

University of Delaware University of Kansas University of Maryland University of Notre Dame du Lac University of Rochester University of Texas at Arlington University of Wisconsin–Madison University of Wisconsin–River Falls Yale University

Next step

- Update the (US) IceCube web-site to better showcase Gen2
- Create repository for material
- Maintain a <u>Q&A page</u> for internal use
- Develop a more comprehensive communication strategy to address all (international) stake holders
- The astro-community is supportive, next convince the particle physics community ⇒ Snowmass!
- Organize a workshop in Washington in the spring

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	ICECUBE GEN2			RESEARCH	PROJECT	PARTNERS	YOUNG TALENT	DE <u>EN</u>
The planned expansion of the IceCube observatory at the South Pole marks a new era in neutrino astronomy.								

German Gen2 web-site

Please let us know if you have ideas or questions!