#### **Report from the Americas**

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JUNO Europe+Americas Meeting Ferrara, Italy October 2022





#### Three countries from the Americas actively participate in JUNO:







# **Brazil Funding**



- Participation in JUNO partially funded since 2021 by CNPq (National Council for Scientific and Technological Development)
  - Provides only basic level of support
- Made a joint request to CNPq together with ~30 other faculty working in neutrino physics for a "Instituto Nacionais de Ciencia e Tecnologia" grant
  - Competitive grant, waiting for answer
- Have applied to FAPERJ (funding agency for state of Rio de Janeiro) for an individual research grant for Hiroshi
- Have asked RENAFAE for support for the JUNO common fund
  - Not allowed to use any other funding to pay for this type of expense
  - Process delayed by change of leadership; still waiting for an answer











- Funding:
  - Chilean participation in Chile funded since 2015 by ANID (National Agency for Research and Development)

Last grant with Pedro as PI finished in May 2022

- The Millennium Institute for SubAtomic Physics in the High-Energy Frontier (SAPHIR) joined JUNO in July 2021
  - Functions both as an institution and as a funding agency
  - Has been funding most of the Chilean effort since 2021
- The Chilean group is currently undergoing a restructuring process:
  - Trying to bring new faculty/research staff to lead PUC/SAPHIR effort
  - Plan is to strengthen the group and get it ready for data-taking phase







### **United States**







### **United States**



- Funding:
  - B. McDonough is PI of NSF grant focused broadly on geoneutrino studies
  - In 2021 the NSF (National Science Foundation) agreed to include JUNO to its particle physics research portfolio
    - P. Ochoa is PI of NSF grant focused entirely on JUNO and that includes support for UC Irvine's contributions to the common fund



- We just got green light to transfer resources from the US to China for the sPMT system
- Current focus is on successfully completing our hardware responsibilities while also preparing for data-taking phase

- sPMT system:

Production of HV splitter boards is now fully complete
Production of Underwater Boxes is well underway
Just passed Production Readiness Review for electronics integration



(see <u>DocDB-8947</u> and <u>DocDB-8946</u>)

Work being done onsite; trying to support remotely as much as possible

- Geological studies:
  - Carrying out a geochemical study on JUNO site rocks in collaboration with Fabio Mantovani and Virginia Strati
    - Using laser ablation ICPMS capabilities at U. Maryland
    - Trying to shed more light on geological evolution of our region of crust
  - Continue to refine predictions of total & lithospheric geoneutrino flux:



Predicted JUNO fluxes in tension with those from Chinese team

- Phenomenological studies:

#### An example of some recent phenomenological work by the PUC-Rio group

Probing neutrino decay scenarios by using the Earth matter effects on supernova neutrinos E. A. Delgado, H. Nunokawa and A. A. Quiroga, JCAP01, 003 (2022)



- Analysis: precision measurement of oscillation parameters
  - Collaboration paper has now been accepted to CPC
    - Joint China + Europe + Americas effort
    - Had several rounds of proof exchange with journal
    - Publication is imminent
  - Continuing this work through a joint effort with Europe
    - Active participation from the Americas:
      - Developing a new Bayesian analysis in Brazil
      - Working on improving one of the existing analyses in the US

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