

Early Career Report

Manoj Kumar Singh

Academia Sinica, Taiwan

Mathbar Singh Raut

University of South Dakota, USA

PIRE GEMADARC Summer Collaboration Meeting-2023



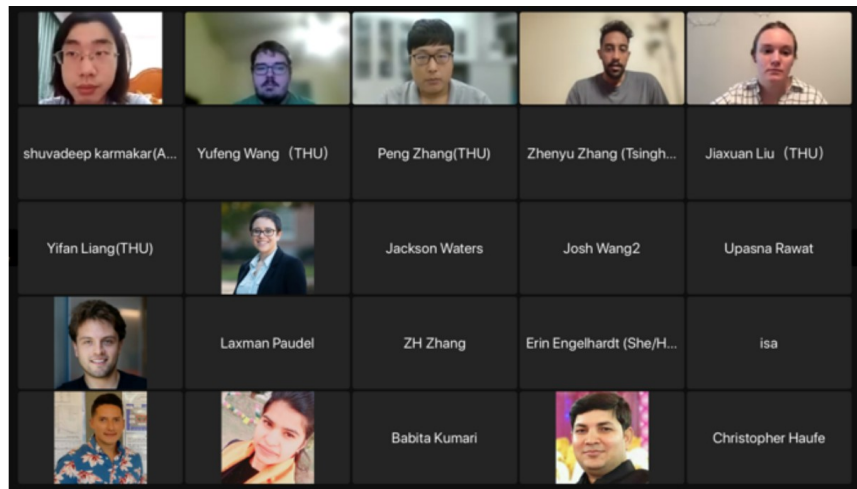
PIRE
GEMADARC



Outline

- ☐ **Winter Collaboration Meeting-2022 (online)**
- ☐ **Social Media Updates**
- ☐ **Monthly News Letter**

Winter Collaboration Meeting-2022 (online)



Schedule

Session I: Nov. 17th 2022, US Central Time (CT)

Chair: Manoj Kumar Singh

Speaker	Institution	Topic
Kyler Kooi	USD	Measuring Charge Carrier Mobility in HPGe Detectors using Waveform Analysis
David Hervas	UNC	Imaging an IC Detector
Brady Bos	UNC	LEGEND-200 Commissioning
Rui Xu	Tsinghua	Constraints on sub-GeV dark matter boosted by cosmic rays from the CDEX-10 experiment at the China Jinping Underground Laboratory
Pramod Acharya	USD	Time-Dependent Impact Ionization in a Large-Size Ge Detector Made from a Crystal Grown at USD
Rusty Harris	TAMU	Ring-contact fabrication



Session II: Dec. 1st 2022, US Central Time (CT)

Chair: Davis Hervas

Speaker	Institution	Topic
Matt Fritts	UMN	Modeling charge transport at mK for time-dependent impact ionization
Joseph Mammo	USD	Designing a Novel Data Analysis Framework for the MINER Experiment
Sanjay Bhattarai	USD	Binding energy and the trapping cross section of cluster dipole states in a HPGe detector operated at cryogenic temperature
Xinping Geng	Tsinghua	Search for exotic neutrino interactions using solar neutrinos in the CDEX-10 experiment
Zhenyu Zhang	Tsinghua	Constraints on dark matter-electron interaction from CDEX HPGe detectors
Wenhan Dai	Tsinghua	Modeling the charge collection efficiency in the Li-diffused inactive layer of P-type high purity germanium detector
Kunming Dong	USD	Development of Germanium (Ge) Ring Contact Detectors for Ge-based Neutrinoless Double-Beta Decay Experiment

Session III: Dec. 8th 2022, US Central Time (CT)

Chair: Mathbar Raut

Speaker	Institution	Topic
Nader Mirabolfathi	TAMU	Development of single electron resolution detectors with background discrimination
Peng Zhang	Tsinghua	Machine learning Based Discrimination of Bulk and surface events in p-type germanium detectors
Josh J.S. Wang	Academia Sinica	R&D on PCGe pulse shape studies at detector threshold
Laxman Paudel	USD	Pulse-Shape-Based Analysis using Machine Learning in the Majorana Demonstrator
Andrew Gavin	UNC	Development of Specialized DAQ for TRISTAN Upgrade
Ren-ming-Jie Li	SCU	Identification of anomalous fast bulk events in a p-type point-contact germanium detector
William Baker	TAMU	Contact Free Detector Technologies and Experiments

Winter Collaboration Meeting-2022 (online)

1st session on Nov. 17th, 2022

❑ 6 talks during 2 hrs. session

❑ **Speakers:** Kyler Kooi [USD], David Hervas [UNC],
Brady Bos [UNC], Rui Xu [TU], Pramod Acharya[USD],
Prof. Rusty Harris [TAMU]

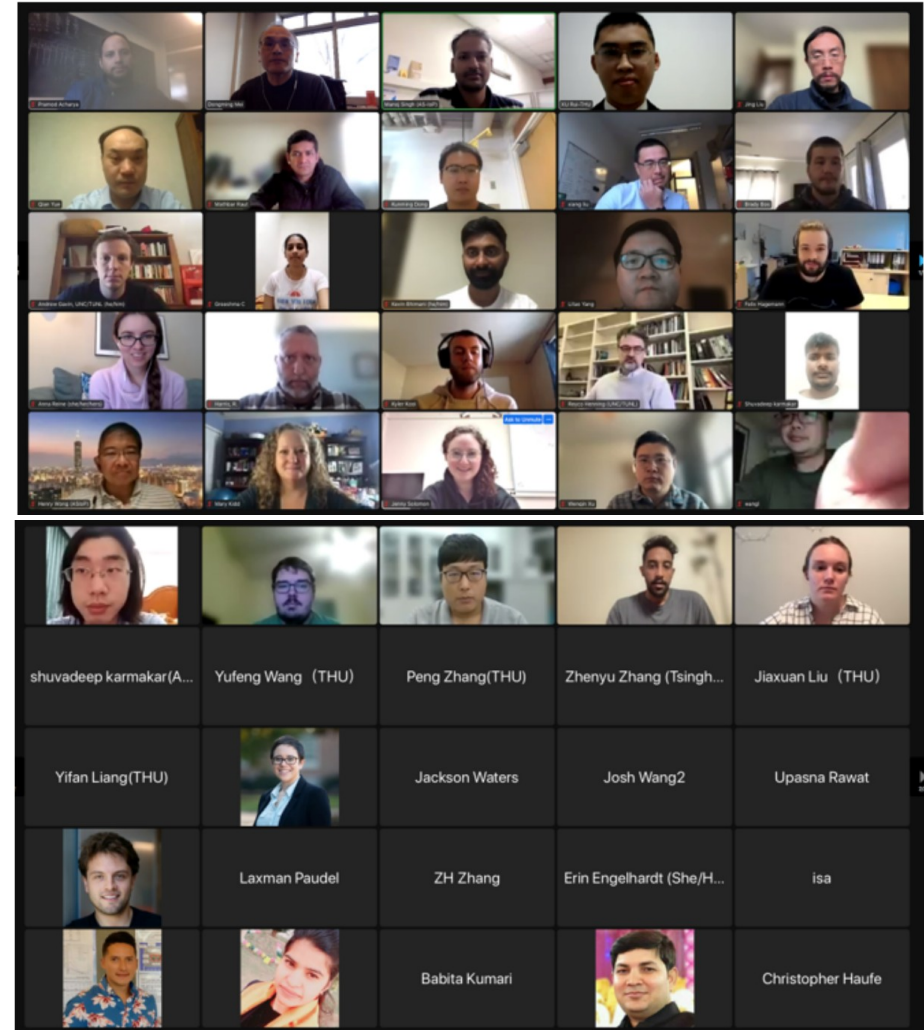
❑ **Talks** – Mainly given by young members

❑ **Chair:** Manoj Kumar Singh

❑ **Participants:** A total of **51** participants attended

❑ **Q/A:** Many questions were discussed after each talk

❑ **Conclusion:** Session was well-received and attended



Winter Collaboration Meeting-2022 (online)

2nd session on Dec. 1st, 2022

- 7 talks were delivered in 2.3 hrs (140 min.)
 - Speakers:** Matt Fritts [UMN], Joseph Mammo [USD], Sanjay Bhattarai [USD], Xinping Geng [TU], Zhenyu Zhang [TU], Wenhan Dai [TU], Kunming Dong [USD]
 - Talks** – Mainly given by young members
 - Chair:** David Hervas
- Participants:** A total of 45 participants attended
- Q/A:** Each talk was followed by a discussion of several questions
- Conclusion:** It was a well-attended and well-received session



Winter Collaboration Meeting-2022 (online)

3rd session on Dec. 8th, 2022

○ *7 talks were delivered in 2.3 hrs (140 min.)*

○ *Speakers:* Nader Mirabolfathi [TAMU], Peng Zhang [TU], Josh J.S. Wang [AS], Laxman Paudel [USD], Andrew Gavin [UNC], Ren-ming-Jie Li [SCU], William Baker [TAMU]

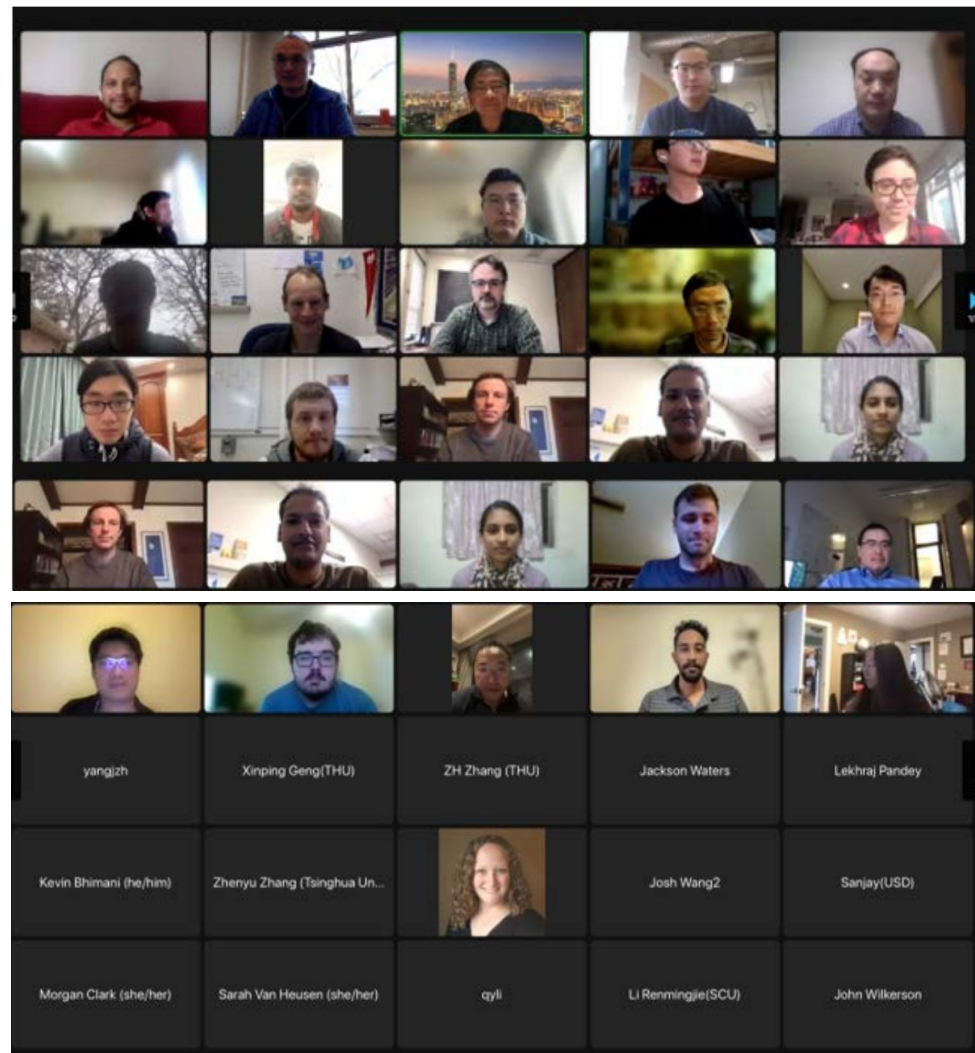
○ *Talks* – Mainly given by young members

○ *Chair:* Mathbar Singh Raut

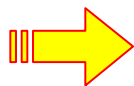
○ *Participants:* A total of **46** participants attended

○ *Q/A:* After each talk, a number of questions were raised and discussed

○ *Conclusion:* Attendance and response to the session were good



Advertisement: Social Media



Collaboration Activities

Research Updates

Meetings

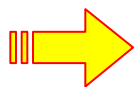
Monthly News Letter



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 Twitter

 Facebook



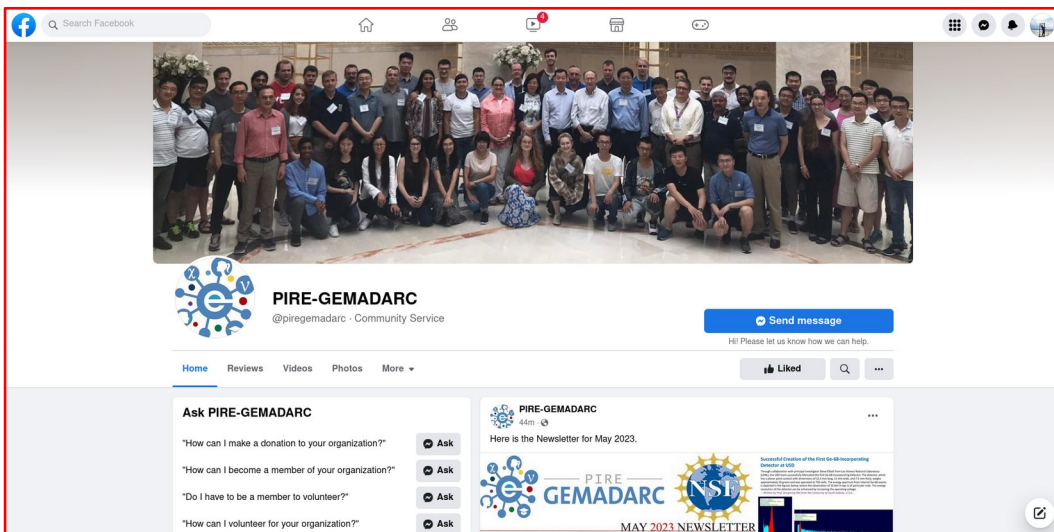
Collaboration Activities

Research Updates

Meetings

Monthly News Letter

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The image shows the Facebook profile page for PIRE-GEMADARC. At the top is a large group photo of the organization's members. Below the photo is the profile picture, which is a circular logo with a stylized 'e' and 'v' and the text 'PIRE-GEMADARC'. The bio reads '@piregemadarc · Community Service'. There is a 'Send message' button and a welcome message: 'Hi! Please let us know how we can help.' Below the bio are tabs for 'Home', 'Reviews', 'Videos', 'Photos', and 'More'. On the left side, there is a 'Ask PIRE-GEMADARC' section with four questions: 'How can I make a donation to your organization?', 'How can I become a member of your organization?', 'Do I have to be a member to volunteer?', and 'How can I volunteer for your organization?'. Each question has an 'Ask' button. On the right side, there is a post from PIRE-GEMADARC dated 44m ago, which says 'Here is the Newsletter for May 2023.' and includes a thumbnail of the newsletter cover.



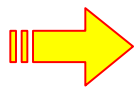
The image shows the Twitter profile page for PIRE-GEMADARC. At the top is a header with the Twitter logo and navigation links: Home, Explore, Notifications, Messages, Lists, Bookmarks, Twitter Blue, Profile, and More. The profile section shows the profile picture, the name 'PIRE-GEMADARC', the handle '@gemadarc', and a bio: 'PIRE GEMADARC, with funding from NSF, is an international collaboration focused on improving germanium technology used in rare event physics searches'. It also shows '4 Following' and '12 Followers'. Below the profile section is a 'Tweets' tab with a tweet from PIRE-GEMADARC dated Jan 21, which says 'January 2023 Newsletter is here!' and includes a thumbnail of the newsletter cover. On the right side, there is a 'You might like' section with three suggested accounts: OSINTdefender (@sentdefender), Mueller, She Wrote (@MuellerSheWrote), and SuperCDMS (@SuperCDMS). Below this is a 'Trends for you' section.

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 Facebook

 Instagram



Collaboration Activities

Research Updates

Meetings

Monthly News Letter

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Facebook

Search Facebook

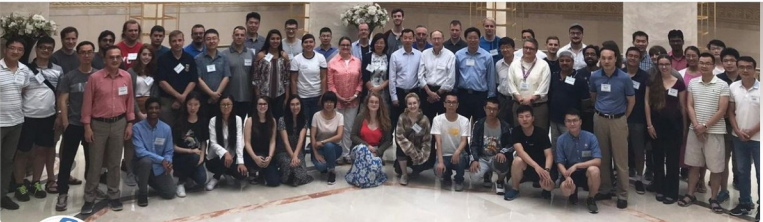
Home


Reviews

Videos

Photos

More





PIRE-GEMADARC

@piregemadarc · Community Service

Send message

Hi! Please let us know how we can help.

Liked

Ask PIRE-GEMADARC

"How can I make a donation to your organization?"

"How can I become a member of your organization?"

"Do I have to be a member to volunteer?"

"How can I volunteer for your organization?"

Ask


Ask

Ask

Ask

PIRE-GEMADARC

Here is the Newsletter for May 2023.



PIRE GEMADARC

Successful Creation of the First Ge-76 Semiconductor Detector at GSI

NSF

Successful Creation of the First Ge-76 Semiconductor Detector at GSI

May 2023 NEWSLETTER

Twitter

Home

Explore

Notifications

Messages

Lists

Bookmarks

Twitter Blue

Profile

More

Tweet

PIRE-GEMADARC

@gemadarc

PIRE-GEMADARC, with funding from NSF, is an international collaboration focused on improving germanium technology used in rare event physics searches

Joined March 2019

4 Following 12 Followers

Tweets


Replies

Media

































Likes

PIRE-GEMADARC @gemadarc · Jan 21


January 2023 Newsletter is here!



Search Twitter




You might like

 OSINTdefender


@sentdefender

Follow

 Mueller, She Wrote

@MuellerSheWrote

Follow

 SuperCDMS

@SuperCDMS

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Following

Message

...

18 posts 9 followers 1 following

PIRE-GEMADARC


Nonprofit organization

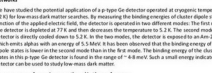
International collaboration focused on improving germanium technology used in rare event physics searches.

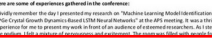
piregemadarc.org

POSTS

TAGGED





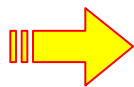


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Collaboration Activities

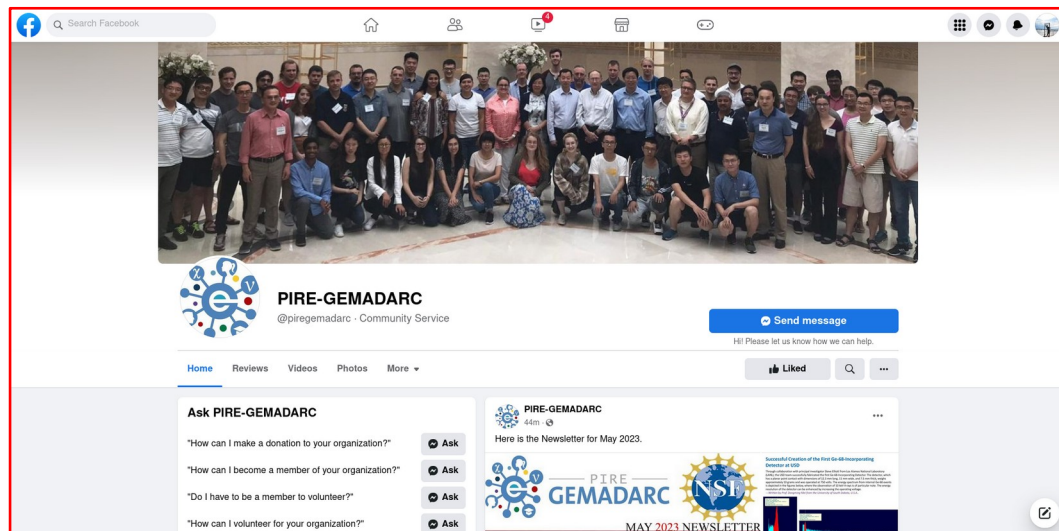
Research Updates

Meetings

Monthly News Letter

Reach-out Collaboration

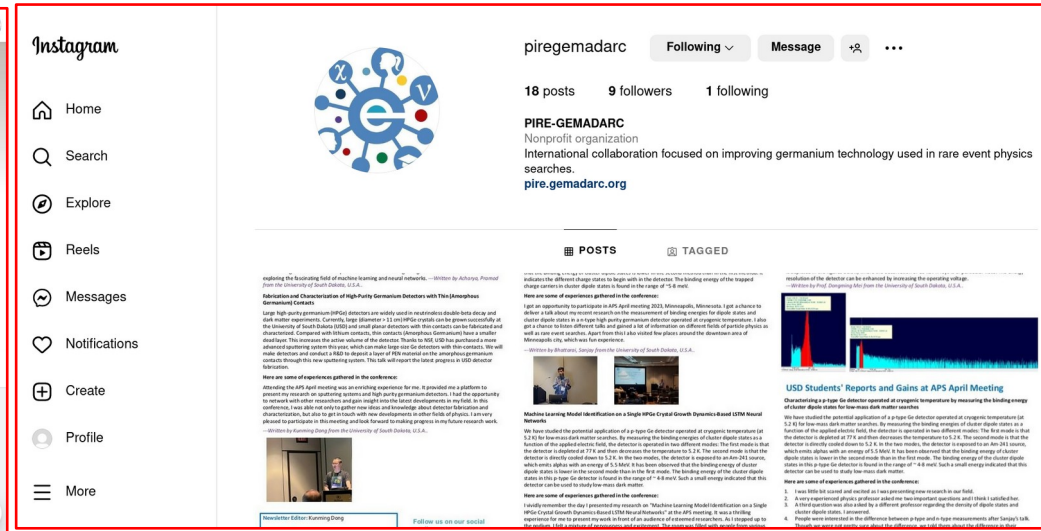
Follow and Share with your colleagues/friends



Facebook profile page for PIRE-GEMADARC. The profile picture shows a large group of people. The cover photo shows a group of people standing in front of a building. The bio states: "PIRE-GEMADARC @piregemadarc · Community Service". The page has 1 post, 1 review, 1 video, 1 photo, and 1 more. The post is titled "Ask PIRE-GEMADARC" and contains several questions: "How can I make a donation to your organization?", "How can I become a member of your organization?", "Do I have to be a member to volunteer?", and "How can I volunteer for your organization?". The post also includes a link to the PIRE-GEMADARC newsletter and a link to the PIRE-GEMADARC website.



Twitter profile page for PIRE-GEMADARC. The profile picture shows a group of people. The bio states: "PIRE-GEMADARC, with funding from NSF, is an international collaboration focused on improving germanium technology used in rare event physics searches". The page has 50 tweets, 4 following, and 12 followers. The latest tweet is titled "PIRE-GEMADARC @gemadarc · Jan 21 January 2023 Newsletter is here!". The tweet includes a link to the newsletter and a link to the PIRE-GEMADARC website.



Instagram profile page for piregemadarc. The profile picture shows a group of people. The bio states: "PIRE-GEMADARC Nonprofit organization International collaboration focused on improving germanium technology used in rare event physics searches. piregemadarc.org". The page has 18 posts, 9 followers, and 1 following. The latest post is titled "USD Students' Reports and Gains at APS April Meeting" and includes a link to the report. The post also includes a link to the PIRE-GEMADARC website.

Monthly News Letter

Managed primarily by:
Hao Mei (Designer)
Prof. Mary Kidd
Prof. Dongming Mei
Prof. Joel Sander

Advertisement on social

Media Platform

Contribution



PIRE
GEMADARC



JANUARY 2022 NEWSLETTER

Inside This Issue

THE SECOND SESSION OF PIRE-GEMADARC WINTER COLLABORATION MEETING

The second session of the PIRE-GEMADARC winter collaboration was held on December 2nd, 2021. This winter collaboration meeting is organized by two young-member representatives from the Steering Committee. Esteban Leon (UNC) and Sanjay Bhattarai (USD) determined the optimal meetings dates, session chairs, as well as soliciting topic areas, talks, and speakers from young members. The collaboration meetings have the single focus of giving young members a forum to disseminate their research to an international audience. The second session was well attended by the collaboration. There were 46 collaborators from 13 institutions across China, India, Germany, USA, and Taiwan attending the first session. One invited talk and four contributed talks were given. Photo below shows part of the participants.

1. The Second Session of PIRE-GEMADARC Winter Collaboration Meeting
2. The first meeting of PIRE-GEMADARC in 2022
3. Authors for the 2nd session
4. Upcoming Events

PIRE-GEMADARC
Newsletter
January 2022

Submit news or ideas to:
wenzhao.wei@usd.edu

Submission deadline for
next issue:
February 5, 2022
Next issue distributed:
February 15, 2022



PIRE
GEMADARC



DECEMBER 2022 NEWSLETTER

THE FIRST SESSION OF THE WINTER COLLABORATION MEETING



Inside This Issue

1. The first session of the winter collaboration meeting
2. CDEX collaboration publishes two articles on PRL, reporting results on light dark matter searches
3. PIRE-GEMADARC 2023 summer events in Taiwan



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JANUARY 2023 NEWSLETTER

Inside This Issue

2023 UNDERGRADUATES RESEARCH FLIER



Experience Taiwan

Engage in Physics Research

What is PIRE-GEMADARC? PIRE stands for Partnerships for International Research and Education. GEMADARC is the GERmanium MATerials and Detectors Advancement Research Consortium. Together, this means we provide international research experiences for undergraduates in the development of germanium technologies applied to the study of neutrino properties and the detection of dark matter. Interested? JOIN US!

Seeking students interested in hands-on, guided research at the

1. 2023 Undergraduates Research Flier
2. The second session of the winter collaboration meeting
3. Introduction to a New Paper

PIRE-GEMADARC
Newsletter
January 2023

Submit news or ideas to:
wenzhao.wei@usd.edu



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MAY 2023 NEWSLETTER

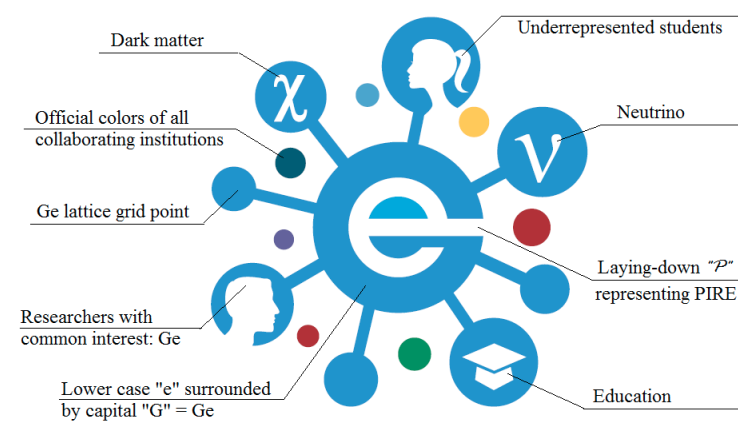
Texas A&M Discovers New Circuit Element

Recent research published by Texas A&M has demonstrated the discovery of a new circuit element. This is the sixth overall discovered circuit element, adding to the classical understanding of passive two terminal circuit elements in electrical sciences.

The classical three circuit elements we all know very well: the resistor, capacitor and inductor. Two additional circuit elements, the memristor and the memcapacitor, were only discovered in the past 15 years. These newer circuit elements are known as the mem- versions of their classical counterparts, and their current and voltage properties are dependent on previous values of

Inside This Issue

1. New Circuit Element Discovered by Texas A&M
2. First Ge-68 Detector Created at USD
3. USD Students' Progress at 2023 APS April Meeting



Thank You !