Welcome to the Webinar!

Website link for USCMS PURSUE

● Agenda
  ● [Website link](https://indico.cern.ch/event/1219244/)
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My research:
I am interested in searching for new particles, studying properties of known particles (top quark, Higgs Bosons etc).
I am also involved in R&D and construction of Silicon detector based tracker detectors.

I enjoy:
teaching; problem solving; working in collaborative environments; learning new and innovative ideas from my students; cooking and exchanging recipes.

Challenges I like to tackle:
promoting Diversity, Equity and Inclusion practices in research, teaching and learning.
promoting dialogues to create awareness of underrepresented groups in Physics / STEM

I’ve got my eyes on:
learning to sail; organize events which meld science with arts and music; spend more time in-person with family and friends.
Agenda

USCMS PURSUE webinar

- **16:00 → 16:05** Opening Remarks
  - **Speakers:** Meenakshi Narain (Brown University (US)), Sudhir Malik (University of Puerto Rico (US))

- **16:05 → 16:20** Overview of the Program
  - **Speaker:** Meenakshi Narain (Brown University (US))

- **16:20 → 17:00** Shared Experiences by Interns and Mentors
  - **Intern Alumni 1**
    - **Speaker:** Holly Wingren
  - **Intern Alumni 2**
    - **Speaker:** Sneha Vireshwar Dixit
  - **Mentor Speaker**
    - **Speaker:** Darin Acosta (Rice University (US))

- **17:00 → 17:15** Application Process and Timelines
  - **Speaker:** Sudhir Malik (University of Puerto Rico (US))

- **17:15 → 17:30** Q&A
USCMS - PURSUE
Program for Undergraduate Research Summer Experience

● Dates:
  ● June 5, 2023 until Aug 11, 2023 (10 weeks)
  ● We require at least 40 hours of work week
  ● Stipend - $6000 (600$/week for 10 weeks)

● Mode:
  ● in-person (default/preferred)
  ● a few positions which can be partially virtual
    ★ to accommodate special situations

● Program:
  ● This internship offers undergraduate students an opportunity to perform a project under the mentorship of scientists working at the discovery frontier in Particle Physics.
  ● The scientists are associated with the U.S. CMS Collaboration and performing cutting-edge research with the CMS experiment at Large Hadron Collider located in Switzerland.
  ● Our expectation is that the students will complete this program, with the help of the research mentors.
The U.S. CMS Collaboration

- U.S. CMS is a collaboration of about ~1200 members from 54 Universities institutes including Fermilab.
- It is one of the largest collaborations of in the US particle physics community.
  - It trains ~200 students/yr, ~100 postdocs/yr,
  - produces ~45 Ph.Ds/yr,
  - published ~1000 scientific papers; and
  - provides significant leadership of the LHC

- Many Activities in support of Physics & DEI listed in the recent review slides:
  https://drive.google.com/file/d/1m4OnrT-CgqyVYdc4hNB1hrNn60Rr3j1A/view?usp=sharing
The LHC
The proton beams are structured into 2808 bunches. Each bunch consists of about $10^{11}$ protons. It circles the ring 11245 times per second. Collisions between bunches occur every 25 ns.
The Goal of the USCMS - PURSUE Program

- As part of our commitment to diversity and inclusion this program maps to the USCMS DEI Action Plan “Identity formation and community engagement”.

- Students will use computational tools, data-science methods and various instrumentation methods to learn about fundamental particles and their interactions.

- Students will analyze data obtained from the CMS experiment at the Large Hadron Collider located at CERN, Switzerland.

- Our aim is to strengthen our research by building an inclusive and diverse community with a wide range of perspectives.

- In addition, the research internships will possibly help and encourage the students to persist in a STEM major through college and train them in skills needed for a future career in the STEM workforce.
Format of the program in 2023

- Dates June 5, 2023 until Aug 11, 2023 (10 weeks)

<table>
<thead>
<tr>
<th>Summer - 10 weeks</th>
<th>PURSUE</th>
<th>School (2 weeks)</th>
<th>Lectures (2 per week)</th>
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<tbody>
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<td>Fermilab</td>
<td>● Hands-on Skills</td>
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<td>Detector Techniques</td>
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<tr>
<th>Research institution</th>
<th>Physics Research Projects (8 weeks)</th>
<th>Networking &amp; Professional Development (summer - 1 per week) (semester - 2 per month)</th>
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<td></td>
<td>● Physics Analysis Projects</td>
<td>○ Meet U.S. CMS</td>
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<td>● Advanced Training (as required)</td>
<td>▪ Students</td>
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<td>○ Lab skills and software modules</td>
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● Start with PURSUE-school at Fermilab, Illinois
  ○ 2 week “training”
  ○ Housing and travel to Fermilab will be provided

● Learn common tools which will be used by all during the internship
● An opportunity for all students and research mentors to network with each other before branching off to research projects.
● Build a cohort of students who can help each other during the internship!
Next - engage with the research projects at various institutions

- 8 week “research internship”
- Each student will be matched with a research mentor and project at a USCMS institution
- Housing and travel to host institution/project site will be provided
• Each week students will also attend various lectures and professional development activities

**Lectures (2 per week)**
- Physics Concepts
- Physics Analysis Results
- Physics Techniques
- Detector Techniques

**Networking & Professional Development**
- (summer - 1 per week)
- (semester - 2 per month)
  - Meet U.S. CMS
    - Students
    - Scientists
    - Professors
    - Engineers/Techs
  - Building networks
  - Graduate school appl.
  - Resume writing
  - Interviewing skills
  - Soft skills
  - DEI topics
USCMS - PURSUE - 2022
Program for Undergraduate Research Summer Experience

Zoom Screenshot - 6 June (Day1)