

# Department of Energy (DOE) & Office of High Energy Physics (HEP) Mission

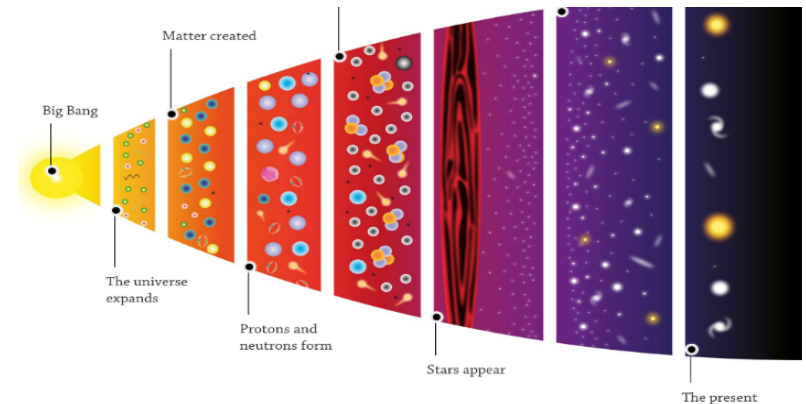
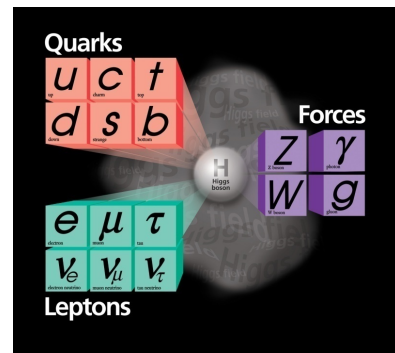
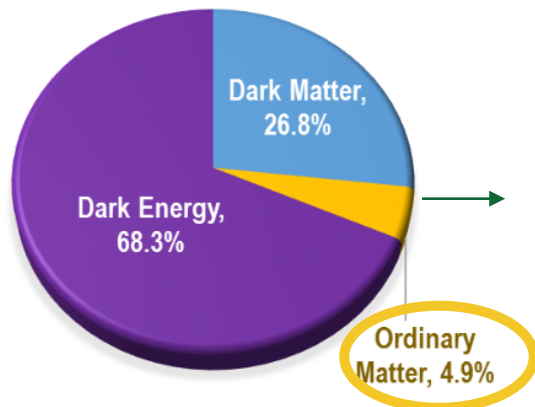
**DOE Mission includes: Maintain a vibrant U.S. effort in science and engineering as a cornerstone of our economic prosperity with clear leadership in strategic areas.**

**HEP mission** is to understand how the universe works at its most fundamental level:

**Discover** the elementary constituents of matter and energy

**Probe** the interactions between them

**Explore** the basic nature of space and time



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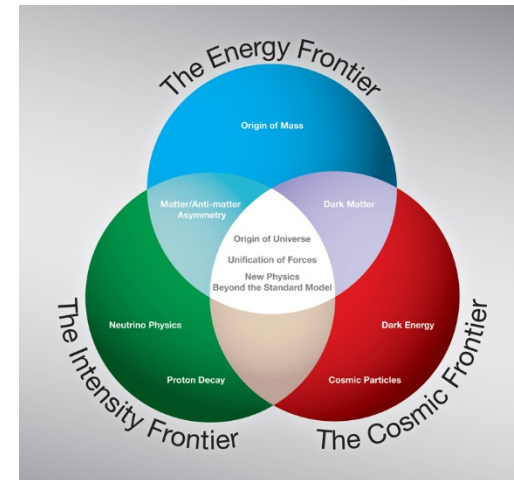
**→ Scientific Areas are intertwined: High Energy/Particle Physics, Cosmology, Astrophysics, and Astronomy.**

# HEP Program Layout

## **HEP is carried out along 3 Frontiers:**

Advancements at all 3 frontiers are needed to achieve the long-term goals of the field.

→ HEP is primarily a Particle Accelerator based program: **Energy & Intensity Frontiers**



→ **Cosmic Frontier** uses data from natural sources to study the fundamental nature of matter, energy, space and time.

→ To fully carry out the program, we also have significant efforts in **Theory, Advanced detector R&D, & Accelerator R&D.**




# HEP Program & P5 Strategic Plan

HEP gets guidance from 2 federal advisory panels, **HEPAP** & AAAC, as well as the National Academies, and community science studies.

HEP's science and program priorities come from community via HEPAP's **Particle Physics Project Prioritization Panel ("P5")** strategic plan.

HEP's science and program priorities are recommended by our community advisory committee's (HEPAP) **Particle Physics Project Prioritization Panel ("P5")** strategic plan. HEPAP reports to DOE & NSF. We are now following the 2014 P5 plan. The process for the next one has been started – "Snowmass" for science input, followed by

Research Frontiers				
Particle Physics Science Drivers		Energy Frontier	Intensity Frontier	Cosmic Frontier
	Higgs Boson	●		
	Neutrino Mass		●	●
	Dark Matter	●	●	●
	Cosmic Acceleration			●
	Explore the Unknown	●	●	●

# HEP Provides Funding for Scientists to work on HEP Experiments, in Theory & technology studies

See

- <https://www.energy.gov/science/office-science-funding/office-science-funding-opportunities>
- <https://science.osti.gov/hep/Funding-Opportunities>

Annual Funding Opportunity Announcements (FOA) are geared primarily towards PhD scientists employed as a researcher at US laboratories or professors at US universities.

→FOA's – for example:

- ▶ Research Opportunities in High Energy Physics
- ▶ Early Career Research Program
- ▶ Quantum Information Science
- ▶ Traineeship in Accelerator Science & Technology

The proposals are all subject to competitive peer review.

Universities: Typically the funds pay for the professor's time, for salaries for postdocs and students and for expenses (computers, travel etc).



# HEP - Other Research Funding Opportunities & Info for PI's

## **Workforce Development (WDTS) programs:**

<https://science.osti.gov/wdts>

- **Office of Science Graduate Student Research fellowships (SCSGR)**
  - Supports grad student research at a DOE lab, 3 to 12 months, 2 calls per year
- **Science Undergraduate Laboratory Internships (SULI)**
  - Supports undergraduate research at a DOE lab, 10 to 16 weeks; 3 calls per year
- **Visiting Faculty Program (VFP)**
  - Summer research support for faculty/students from historically underrepresented institutions
- **Community College Internships (CCI)**
- **Albert Einstein Distinguished Educator Fellowship (AEF)**
- **National Science Bowl (NSB)**

**HEP holds annual PI meetings** - To brief and guide the community on future FOAs and to provide status and overview of the program.

- ▶ Opportunities for separate one-on-one sessions with program managers.
- ▶ The 2020 HEP PI meeting was held online August 24-26. All talks at <https://www.ornl.gov/heppi2020>