



saturday morning **PHYSICS**

2017 - 18



Fermilab is America's particle physics and accelerator laboratory.

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Batavia, IL 60510
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SMP Office: 630-840-3092

Fermilab is located about 45 miles west of Chicago,
immediately east of Batavia. Directions to Fermilab
<http://www.fnal.gov/pub/visiting/directions/index.html>

Saturday Morning Physics

Purpose

To help high school students increase their understanding and appreciation of modern physics.

Program

Classes are held on Saturday mornings from 9:00 to noon for nine consecutive weeks. The three-hour period consists of a lecture and demonstration and an hour-long tour of laboratory facilities.

Sessions during the 2017-18 academic year will begin Sept. 2017 and Jan. and Mar. 2018. Class will not be held on the Saturday, Nov. 25, 2017 or Saturday, Mar. 31, 2018.

Each nine-week session covers the same general topics.

Instructors and Facilities

Fermilab scientists and engineers serve as volunteer instructors. The laboratory's accelerator, research and industrial facilities provide meaningful tours and demonstrations.

Location

Classes are held in Wilson Hall's One West conference room on the first floor. GPS coordinates: 41°50'19.6"N+88°15'40.3"W.

Participate

SMP is open to any public, private, parochial or home-schooled high school student. Although not required, completion of some high school-level science classes would be helpful before participating.

Apply

Register online at <http://saturdaymorningphysics.fnal.gov/> or request to be register by sending an email to saturday_morning_physics_students@fnal.gov.

Student Notification

Acceptance notifications will be made at least one week prior to the beginning of the student's preferred session. Registration confirmations will be accepted up to two weeks into each session.

Recognition

Students who attend and complete seven classes of the nine-week course are awarded a certificate of accomplishment. Parents, guardians and teachers are invited to attend a graduation celebration at the conclusion of class on the last day of each session.

Registration Deadline

Aug. 7	Registration opens for all three sessions
Oct. 14	Session I - Registration Deadline
Jan. 20	Session II - Registration Deadline
Mar. 24	Session III - Registration Deadline

Program Calendar

Session I	Sep. 30 - Dec. 9, 2017
	Nov. 18 - "Introducción a la ciencia en Fermilab"
	Nov. 25 - No Class
Session II	Jan. 6 - Mar. 3, 2018
Session III	Mar. 10 - May 12, 2018
	Mar. 31 - No class

Lecture Topics

Introduction:

Physics, the scientific method and overview of Fermilab science.

Modern Physics:

Space, time and matter at extreme velocities and gravitational conditions. The quantum world.

Particle Physics:

What is this world made of at the most fundamental level?
The laws that govern particles and forces.

The Ghostly Neutrino:

Particles that zip through everything, their role in the origin of the universe and scientific pursuit in some of the most remote places on Earth.

How We Make Particles:

The concept of accelerating particles to produce particle beams, particle accelerator technology, history and the exciting future.

Energy and Climate:

Energy, climate and humans' effects on the environment.

Cosmology:

How the universe began and how it has evolved. The role of matter, dark matter and dark energy in the evolution of the universe.

How We Detect Particles:

Viewing particles through their interactions with matter, various detector technologies used in particle physics experiments.

Physics and Society:

The interaction between science and society and how one impacts the other.

TOURS of Fermilab accelerators, research facilities and projects supplement weekly lectures.