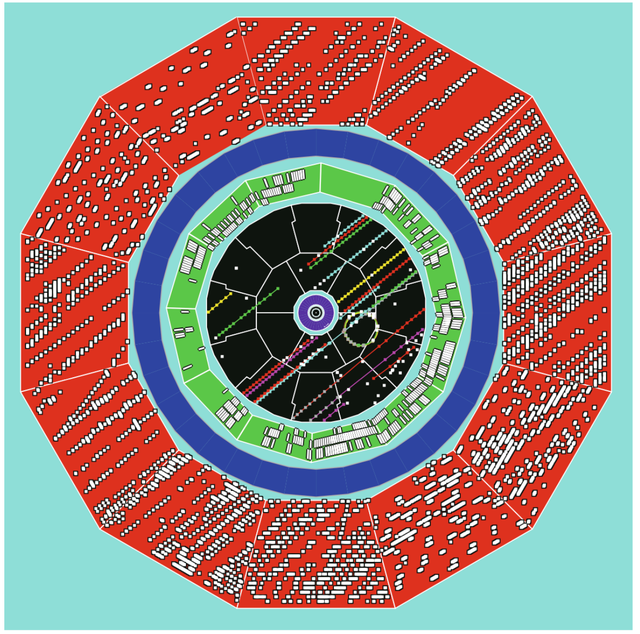
Special Topics in Particle Physics

Astroparticle Physics

Course requirements



Helga Dénes 2024 S1 Yachay Tech

hdenes@yachaytech.edu.ec

Classes

- Tuesday 2:00 PM - 3:59 PM; I-204
- Wednesday 11:00 AM - 12:59 PM; C-102
- Friday 3:00 PM - 4:59 PM; I-203

Changing the class on Friday?

Options:
- Monday after 10 am
- Earlier on Friday (10 am - 12 am)

Attendance is not mandatory and it will not affect the grades.

If you decide that you do not want to take the class after all, make sure to unregister from the class. Otherwise the class will be failed.

Syllabus

Topics

1. Introduction and the Standard Model
2. Kinematics and cross sections
3. Particle and Radiation detection
4. Acceleration mechanisms
5. Primary cosmic rays
6. Secondary cosmic rays
7. The Early Universe
8. Big-Bang Nucleosynthesis

Note: This class is going to build on material of the **Introduction to Nuclear and Particle physics**, Introduction to Astrophysics and Cosmology and Relativity.

Evaluation

- Quizzes **40% of the grade (approximately 4 Quizzes)**
- Midterm exam **30% of the grade**
- Final exam **30% of the grade**

Exams, Quizzes will be announced in advance in class and via email.

Academic integrity is very important.

Cheating in exams or quizzes will have a penalty of a score 0 for the full exam or quiz.

Recommended reading

I am going to use material from this book for the class:

Claus Grupen: Astroparticle Physics (2nd edition)

I mostly use slides for this class, based on the this book. All the slides are going to be available online via GitHub: https://github.com/helgadenes/Astroparticle_physics_Yachay

All slides will also be available on Moodle.

There are also many other good books on the topic and plenty of online resources.

Please feel free to contact me in person or trough email if you have questions about the class.

My email: hdenes@yachaytech.edu.ec

Recommended reading

This class is going to build on material of the Introduction to Nuclear and Particle physics, Introduction to Astrophysics and Cosmology and Relativity.

Additional recommended books:

Griffiths, David J. Introduction to Elementary Particles
Krane, Kenneth. Introductory Nuclear Physics
Arnab Rai Choudhuri: Astrophysics for physicists
Robert Resnick: Introduction to Special Relativity
Carroll, Bradley W., and Dale A. Ostlie. An Introduction to Modern Astrophysics

Lecture notes:
https://github.com/helgadenes/Nuclear_and_particle_physics_yachay
https://github.com/helgadenes/Astrophysical_Objects_yachay

Class representative?