

**A Brief
Introduction to
NUPAX**

Welcome!

J. A. Formaggio

What is NUPAX?

There are four divisions within the MIT
Physics department:

Astrophysics

Atomic Bio Condensed Matter Plasma
(ABCP)

Theoretical Nuclear and Particle Physics

Experimental Nuclear and Particle Physics*
(*you are here)

This is your academic home while you
are a student at MIT.

Academic Items to Consider

Classes

Qualifier Exams

Research and Thesis

Classes

We ask students to take core classes, specialty classes and breadth classes.

Core class requirement can be satisfied with either passing the course or taking a written exam.

For NUPAX, that means you must take...

- Intro to Nucl. & Part. Physics (8.701)
 - Nuclear Physics (8.711)
 - Particle Physics (8.811)
- + 2 breadth requirements

The 8.701 class is a new requirement for the division.

Breadth requirements allow students to explore physics beyond their specialty.

Two such courses required while a student here at MIT.

Breadth Requirements

Subject #	Subject Title	Atomic	Biological	Condensed Matter	Plasma	Astronomy	Nuclear Exp.	Particle Exp.	Nuclear Theory	Particle Theory	QI
8.251	String Theory for Undergraduates								2	X	
8.323	Relativistic Quantum Field Theory I						2	2	X	X	
8.370	Quantum Computation										X
8.421 or 8.422	Atomic and Optical Physics I & II <i>(only one may be used as a breadth requirement)</i>	X		2							X
8.511	Theory of Solids I	2		X							
8.591	Quantitative Biology		X								
8.592	Statistical Physics in Biology		X								
8.613J	Introduction to Plasma Physics				X						
8.701	Introduction to Nuclear & Particle Physics						X	X	X	X	
8.711	Introduction to Nuclear Physics						X	X	X	2	
8.811	Particle Physics						X	X	2	X	
8.901 or 8.902	Astrophysics I & II <i>(only one may be used as a breadth requirement)</i>					X					
8.942	Cosmology					X					
8.962	General Relativity					X				X	

Qualifier Exams

- Four parts to the exam (Quantum, Stat Mech, EM, and Classical).
- Students must pass all parts of the Written exam or the equivalent grad-level course (Quantum: 8.321, Stat Mech: 8.333, EM: 8.311; Classical: 8.309) by the January of their second year.
- Passing for these 4 courses is a B+ or higher.
- Next Written Exam set in January 2022.

Oral Exam

- Concentrates on the sub-specialty of the student (in this case, nuclear and particle physics). It is meant to establish your expertise in the field you have chosen.
- Usually consists of an oral presentation of a specific topic (given 1 week before the exam), plus additional questions with regard to the student's research and basic knowledge of nuclear and particle physics.
- Two attempts to pass are given (>99.5% of students pass their 2nd attempt, since 1990)

Your Thesis Research

You will soon be signing up with a research group and tackle it head on.

Average time to handing in the thesis is about 6 years.

The road to the thesis is long and hard, but also immensely rewarding.

Welcome to MIT!