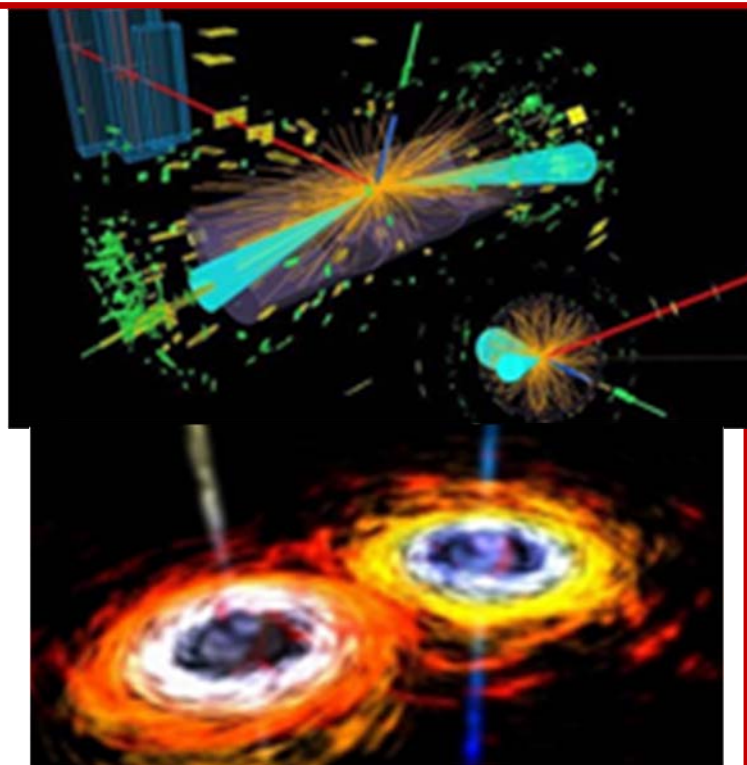




Display of an ATLAS detector event at CERN



Artist's illustration of a black hole merger similar to the recent event observed by the LIGO gravitational wave detector. No visible light was detected.

Physics and Mathematics

Physics is crucial to understanding the world around us, the world inside us, and the world beyond us. It is the most basic and fundamental science. Physics encompasses the study of the universe from the largest galaxies to the smallest subatomic particles. Physics uses the language of mathematics in thinking about the world. As a double major in physics and mathematics you will be equipped to tackle even difficult problems such as general relativity and string theory.

Physics challenges our imaginations with concepts like relativity, and it leads to great discoveries, like computers and lasers, that lead to technologies which change our lives—from healing joints, to curing cancer, to developing sustainable energy solutions.

Physicists are problem solvers. Especially as a PHY/MAT double major, your analytical skills will make you versatile enough to work in interesting places. Some examples of the careers where physicists and mathematicians work are shown here.

Physics and Mathematics

Physics

Mathematics

Medicine

General Relativity

Astronomy

String Theory

Law

Finance

biology

Computer Programming

engineering

Insurance Actuary

Industry

Education

Physics and Mathematics

Advantages of the PHY/MAT Double Major

A sample course sequence for a PHY/MAT double major is shown here. Your direction is largely set by your double major but you can still make choices reflecting what you want to do after graduation. Research is very important in giving you enough information from which to choose a direction. Computing is very important because essentially all research uses computing. Two research courses are shown in this sequence, but many undergraduates do research in the summers.

There are many opportunities to find a research project at Stony Brook or Brookhaven National Laboratory. Possibilities range from the very large (cosmology, gravitational wave astronomy), to the very small (nuclear collisions in RHIC at BNL or particle collisions at CERN). There is ample opportunity to find your direction.

Contact us:

For advice on the physics major
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For advice in the mathematics major
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Sample Course Sequence: PHY/MAT Double Major

This sample course sequence satisfies all physics, mathematics and university requirements for both majors. The physics and mathematics majors require approximately 65 and 40 credits respectively, but the majors are so close that many courses satisfy requirements of both majors. **Courses satisfying requirements of the Stony Brook Curriculum are shown in dark green.** Additional courses are called “electives”. Particularly useful electives are shown with course numbers.

FALL, Freshman Year

MAT 131 Calculus I
PHY 131/133 Physics 1/Lab
CCS 101 Cinema
WRT 102 Intermediate Writing
ITS 101 Introduction to SB

SPRING, Freshman Year

MAT 132 Calculus II
PHY 132/134 Physics 2/Lab
PHY 153 Python (elective)
HIS 100 The Ancient World
ITS 102 Topics information tech

FALL, Sophomore Year

MAT 307 Calc 3/Lin. Alg.
PHY 251/252 Modern/Lab
PHY 277 Programming
AST 248 Search for Life
MAT 200: Logic, Proof

SPRING, Sophomore Year

MAT 308 Calc 4/Lin. Alg.
PHY 300 Waves and Optics
PHY 335 Electronics Lab
PHY 287 Introductory Research
JRN 101 News Literacy

FALL, Junior Year

PHY 301 Electricity Magnetism
PHY 303 Mechanics
HIS 103 American His to 1877
MAT 341 Applied Real Anal.
MAT 312 Applied Algebra

SPRING, Junior Year

PHY 306 Thermo Stat Mech
PHY 308 Quantum Physics
PHY 302 EM Theory (elective)
MAT 342 Applied Complex Anal.
MAT 310 Linear Algebra

FALL, Senior Year

PHY 487 Research
PHY 445 Senior Laboratory
HIS 396 US History
SPN 111 Elementary Spanish
PHY 459 Write Effectively
MAT 319 Foundations of Anal.

SPRING, Senior Year

PHY 431 Nuc. Phys. (elective)
PHY 408 Relativity (elective)
MAT 362 Differential Geom. (el)
SPN 112 Elementary Spn. II
PHY 475 Teach. Practicum (el)