Physicists and Astronomers

SOC: 19-2010 • Career Profile Report

■ Key Facts

$166,290	26,400	+4.0%
Median Salary	Employment	Growth Rate

■ Requirements & Salary Range

Education: Doctoral

■ Automation Risk Assessment

Low Risk - 8.0% probability of being automated in the next 10-20 years.

This job is relatively safe from automation due to its creative, social, or complex problem-solving requirements.

■■ Work-Life Balance

7.5/10 - Good work-life balance

■ Personality Fit (RIASEC)

Higher scores indicate better personality fit for this career type.

Realistic	6.2/10	**Investigative**	9.4/10
Artistic	5.6/10	**Social**	6.4/10
Enterprising	4.8/10	**Conventional**	6.4/10

■ Top Skills Required

Analytical skills, Communication skills, Critical-thinking skills, Interpersonal skills, Math skills, Problem-solving skills, Self-discipline

✓ Strengths

- High Demand
- Flexible Work
- Continuous Learning

■ Challenges

- Burnout Risk
- Rapid Technological Change

■ What They Do

Physicists and Astronomers study **the fundamental principles of matter, energy, space, and celestial bodies**. They conduct research, develop theories, and analyze data to advance scientific knowledge. Their work is critical in research, education, technology development, and understanding the universe.

This career is well suited for individuals who enjoy scientific research, problem-solving, and exploring theoretical or observational phenomena.

What Do Physicists and Astronomers Do?

These professionals conduct experiments, develop models, and study natural phenomena to understand the physical world and the universe.

Common responsibilities include:

- Designing and performing experiments or observations
- Analyzing data using mathematical and computational tools
- Developing theories or models to explain physical or astronomical phenomena
- Writing research papers, reports, and scientific publications
- Collaborating with other scientists, engineers, and research teams
- Presenting findings at conferences or educational institutions
- Applying research to practical problems or technological innovations

Key Areas of Physics and Astronomy

Physicists and astronomers may specialize in specific areas, methods, or applications:

- Theoretical Physics: Developing models to explain natural phenomena
- Experimental Physics: Conducting laboratory experiments to test theories
- Astrophysics and Astronomy: Studying celestial bodies, galaxies, and cosmology
- Applied Physics: Translating research into technology or practical applications
- Data Analysis and Simulation: Using computational methods to interpret complex datasets

Skills and Abilities Needed

These professionals combine analytical, mathematical, and research skills.

Core Professional Skills

Personal Qualities That Matter

Education and Career Pathway

This role typically requires advanced education and research experience:

- Bachelor’s Degree: Physics, astronomy, or related field
- Master’s or Doctoral Degree (common): Specialized study in physics, astronomy, or astrophysics
- Research Experience: Laboratory, observatory, or computational research projects
- Postdoctoral Fellowships (optional): Advanced training and research specialization
- Continuing Education: Staying current with scientific developments, publications, and technology

Where Do Physicists and Astronomers Work?

They are employed in organizations conducting research, education, and technological development:

- Universities and Research Institutions
- Government Laboratories and Agencies
- Observatories and Space Research Facilities

- Private Industry and Technology Companies
- Science Museums and Educational Centers

Work environments include laboratories, observatories, offices, field sites, and research facilities.

Is This Career Difficult?

This career requires advanced scientific knowledge, analytical ability, and perseverance. Physicists and astronomers must conduct precise research, analyze complex data, and solve challenging problems.

Who Should Consider This Career?

This career may be a strong fit if you:

- Enjoy scientific research, mathematics, and analysis
- Are curious about the physical world and universe
- Can work independently and collaboratively
- Have strong problem-solving and critical thinking skills
- Want a career advancing knowledge in physics, astronomy, or space science

How to Prepare Early

- Take courses in physics, mathematics, astronomy, and computer science
- Participate in science fairs, research projects, or internships
- Develop analytical, computational, and experimental skills
- Explore undergraduate and graduate programs in physics or astronomy
- Gain experience with laboratory equipment, observatories, or simulation software

Physicists and astronomers advance understanding of the natural world and the universe through research, experimentation, and theoretical analysis.