

UNIVERSITY OF COLORADO, BOULDER

DEPARTMENT OF ASTROPHYSICAL AND PLANETARY SCIENCES

Boulder, Colorado 80309-0391

Students Accepted For Degree	FIELDS		
	Physics	Astronomy	Related Fields
Doctorate		X	X*
Master's		X	X

*Meteorology, Atmospheric/Space Physics, Astrophysics.

1. General

President: Bruce Benson
Dean of Graduate School: Stein Sture
Department Chair: Webster Cash
Department Telephone Number: (303) 492-8915 (C)
World Wide Web Address: <http://aps.colorado.edu>
Type of Institution: University
Control: Public
Setting: Small city
Total Graduate Faculty: 2,217
Total Students: 28,942
Total Graduate Students: 4,458
Annual Graduate Tuition:
In-state residents: Full-time—\$7,688
Out-of-state residents: Full-time—\$22,824
Tuition rates for: 2006–07
Deferred tuition plan: Yes
Other Fees: \$371.57 plus \$30.00 per course
Term: Semester

2. Number of Faculty in Department

The combined total of full-time faculty in the three professorial ranks is 22. The combined total of full-time, part-time, and other faculty at all ranks is 38.

3. Admission, Financial Aid, and Housing

Applications accepted online at: www.colorado.edu/prospective/graduate/apply/process.html
Graduate application fee required: \$50
Admission deadline (Fall admission): 1/15
Admission information: For fall admission, 2007–08, 25 students were admitted and 10 accepted from 142 applicants.
Admission requirements: For admission to the graduate programs, a Bachelor's degree in mathematics or physics is recommended with a minimum undergraduate GPA of 3.0 specified. The GRE is required. The minimum acceptable score—suggested for admission is verbal—75%; quantitative—85%; analytical—75%. The GRE Physics Advanced is required. The average GRE scores for 2007–2008 admissions were verbal—72%; quantitative—87%; analytical—96% advanced physics—62%. Students from non-English speaking countries are required to demonstrate proficiency in English via the TOEFL exam. Minimum acceptable score for admission is 500.

Address financial aid inquiries to: Admissions Chair, Department of Astrophysical and Planetary Sciences
GAPSFAS application required: No
Financial aid deadline: 4/1
Loans available: Yes
Address housing inquiries to: Director, Student Housing Office, Campus Box 159
On-campus, single student housing available: Yes
Cost/term: \$4,150¹
On-campus, family student housing available: Yes
Cost/month: \$598–1,153²

¹Including meals.

²Varies according to number of rooms and whether furnished or unfurnished.

Table A—Faculty, Enrollments, and Degrees Granted

Research Specialty	2007–08 Faculty	Enrollment ¹ Fall 2007		No. of Degrees Granted ² 2006–07 (2002–07)			Median No. of Years for 2003–04 Ph.D.'s
		Master's	Doctorate	Master's	Terminal Master's	Doctorate	
Astrophysics	17	0	32	3(17)	0(2)	6(30)	6
Planetary Science	5	0	14	3(8)	0(1)	1(11)	6
Total		–	46	6(25)	0(3)	7(41)	6
Full-time Grad. Stud.		–	46				
Part-time Grad. Stud.		–	0				
First-year Grad. Stud.		–	9				
Median Years in Grad.							
Study (2002–03 Degrees)		2	6				
Undergraduate Degrees, 2007 (2002–06):			26(107)				

¹ Students not yet committed to a research specialty are entered under non-specialized.

² Five-year totals in parentheses.

4. Graduate Degree Requirements

Master's: PLAN I—30 graduate credits with a B average or above plus a thesis with oral defense. Thesis must represent the equivalent of 4 to 6 semester hours of work (included in the 30 credits listed above). PLAN II—30 graduate credits with a B average or above, plus a comprehensive examination. There are no residence or foreign language requirements.

Doctorate: 39 graduate course credits including 4 hours of graduate seminar, 30 hours of thesis credit (all with grades B or above), plus a demonstrated ability to do original research. Comprehensive examination of math, physics, and scientific judgment, and grasp of his/her particular area of research. There is a six-semester residency requirement. Dissertation and satisfactory defense are required.

Other Programs: Ph.D. in plasma physics is available; emphasis can be on astrophysical, laboratory, or theoretical plasma physics.

Thesis: Thesis may be written *in absentia*.

Table B—Appointments to Graduate Students, 2005–06

Title of Appointee	Appointments		Academic Load Allowed in Credit Hours	Hours of Service Per Week	Stipend for Academic Year (\$)
	Total	First year			
	Semester				
Teaching Assistant	6	3	9–10	20	16,767 ^{1,2}
Research Assistant	40	6	9–10	20	16,767 ^{1,3,4}
NASA GSRP	2	0	9–10		18,000
NSF	0	0	9–10		30,000
Total	46	9			

¹No charge for tuition, Fellowship Supplements for TA's.
²Some summer TA's are available with additional stipend.
³Stipend increases for approved doctoral candidates.
⁴Summer RA's are available with additional stipend.

5. Personnel Engaged in Separately Budgeted Research, 7/02–8/03

Professorial faculty	22
Other faculty	5
Postdoctoral appointments	33
Graduate students	46
Nonteaching research personnel	37
Total	143

6. Separately Budgeted Research Expenditures by Source of Support

	Departmental Research	Physics-related Research Outside Department
Federal government	\$6,386,103	\$8,087,501
Total	\$6,386,103	\$8,087,501

7. Separately Funded and Managed Laboratories

Joint Institute for Laboratory Astrophysics	\$17,405,857
Laboratory for Atmospheric and Space Physics	48,624,543
Total	\$66,030,400

Table C—Separately Budgeted Research Expenditures

Research Specialty	No. of Grants	Expenditures (\$)
Astrophysics	62	6,091,657
Total	62	6,091,657

FACULTY

Professors

- Bagenal**, Frances, Ph.D., MIT, 1981. Space plasma physics.
- Baker**, Daniel N., Ph.D., Iowa, 1974. Space plasma physics; planetary magnetospheres; solar terrestrial coupling.
- Bally**, John, Ph.D., U. Mass., 1980. IR/mm-radio astronomy; star formation; molecular clouds.
- Barth**, Charles A., Ph.D., UCLA, 1958. Emeritus. Structure and composition of planetary atmospheres, especially Earth, Mars, and Venus.

- Begelman**, Mitchell C., Ph.D., Cambridge, 1978. Theoretical astrophysics, black holes, high energy.
- Burns**, Jack, Ph.D., Indiana, 1978. Galaxy clusters, x-ray and radio astronomy.
- Cash**, Webster C., Ph.D., California, Berkeley, 1978. High-energy astrophysics, X-ray instrumentation.
- Conti**, Peter S., Ph.D., California, Berkeley, 1963. Emeritus. Stellar spectroscopy; atmospheres and winds of hot stars.
- Espósito**, Larry W., Ph.D., Massachusetts, 1977. Planetary atmospheres; Saturn's rings.
- Garstang**, Roy, Ph.D., Cambridge, 1954. Emeritus. Atomic physics; astrophysics.
- Green**, James C., Ph.D., Chair of Department, University of California, Berkeley, 1989. Experimental astrophysics, ultraviolet instrumentation.
- Hamilton**, Andrew J. S., Ph.D., Virginia, 1983. Theoretical astrophysics, cosmology.
- Hansen**, Carl J., Ph.D., Yale, 1966. Emeritus. Theoretical astrophysics, stellar structure.
- London**, Julius, Ph.D., NYU, 1951. Emeritus. Atmospheric physics; radiative transfer and photochemistry of the Earth's atmosphere.
- Malville**, J. McKim, Ph.D., Colorado, 1961. Emeritus. Solar physics; magnetic fields in flares, prominences, corona.
- McCray**, Richard A., Ph.D., UCLA, 1967. Emeritus. Theoretical astrophysics.
- Shull**, J. Michael, Ph.D., Princeton, 1976. Theoretical astrophysics; UV/X-ray space astronomy.
- Snow**, Theodore P., Jr., Ph.D., Washington, 1973. Optical and ultraviolet astronomy.
- Speiser**, Theodore W., Ph.D., Penn State, 1964. Emeritus. Observational and theoretical studies of solar-terrestrial physics.
- Stočke**, John T., Ph.D., Arizona, 1977. Observational extragalactic astronomy.
- Thomas**, Gary E., Ph.D., Pittsburgh, 1963. Emeritus. Radiative transfer and photochemistry in planetary atmospheres.
- Toomre**, Juri, Ph.D., Cambridge, 1967. Astrophysical and geophysical fluid dynamics; magnetohydrodynamics; stellar convection.

Associate Professors

- Armitage**, Philip, Ph.D., Cambridge University, 1996. Star formation, accretion disks extrasolar planets.
- Ellingson**, Erica, Ph.D., Arizona, 1989. Astrophysics; extragalactic/cosmology galaxy clusters.
- Ergun**, Robert E., Ph.D., University of California, Berkeley, 1989. Space physics, magnetospheres, and plasma physics.
- Glenn**, Jason, Ph.D., Arizona, 1997. Submillimeter instrumentation, interstellar medium, and cosmology, high-Z galaxies.
- Rast**, Mark, Ph.D., Colorado 1992. Solar Physics convection flows.
- Schneider**, Nicholas M., Ph.D., Arizona, 1988. Planetary astronomy, Io plasma torus.

Assistant Professors

- Darling**, Jeremy, Ph.D., Cornell, 2002. Radio astronomy, high-Z molecules, galaxies.
- Halverson**, Nils, Ph.D., Caltech, 2002. Radio astronomy, CMB cosmology, mm-wave instrumentation, clusters.
- Perna**, Rosalba, Ph.D., Harvard, 1999. High energy astrophysics gamma ray bursts, accretion physics.

Professors Adjoint

- Canup**, Robin M., Ph.D., Colorado, 1995. Planetary sciences.
Chapman, Clark, Ph.D., MIT, 1972. Planetary Science.
DeForest, Craig, Ph.D., Stanford, 1995. Solar physics, instrumentation.
Gilman, Peter A., Ph.D., MIT, 1966. Geophysical and astrophysical fluid dynamics; magnetofluid dynamics; differential rotation.
Levison, Harold F., Ph.D., Michigan, 1986. Planetary dynamics.
Porco, Carolyn, Ph.D., Caltech, 1983. Planetary Science.
Ward, William R., Ph.D., Caltech, 1972. Planetary dynamics.

Professors Attendant

- Stewart**, A. Ian, Ph.D., Belfast, 1965. Planetary atmospheres; airglow and auroral emissions of Earth, Mars, and Venus.

Associate Professor Attendant

- Duncan**, Douglas, Ph.D., Santa Cruz, 1980. Stellar Astronomy and nucleosynthesis, Director of Observatories.

Research Professors

- Ayres**, Thomas R., Ph.D., Colorado, 1975. Stellar atmospheres.
Linsky, Jeffrey L., Ph.D., Harvard, 1968. Astrophysics; formation of spectral lines in solar and stellar atmospheres.

Associate Professors Adjoint

- Bogdan**, Thomas J., Ph.D., Chicago, 1984. Astrophysics.
Grinspoon, David H., Ph.D., Arizona, 1988. Evolution of planetary atmospheres.

Assistant Professor Adjoint

- Charbonneau**, Paul, Ph.D., Montreal, 1990. Astrophysics, solar physics, planetary interiors, and computational physics.

Lecturers

- Bennett**, Jeffrey O., Ph.D., Colorado, 1987. Astrophysics; science education.
Betz, Albert L., Ph.D., University of California, Berkeley, 1977. Infrared spectroscopy, submillimeter instrumentation, and interstellar matter.
Brown, Alexander, Ph.D., St. Andrews, 1978. Astronomy.
Ebbets, Dennis C., Ph.D., Colorado, 1977. Astrophysics.
Hornstein, Seth, Ph.D., UCLA, 2006. Astronomy and Astrophysics.
Kiplinger, Alan L., Ph.D., Texas, Austin, 1978. Solar physics.
Lee, Steven W., Ph.D., Cornell, 1984. Planetary science.
MacGregor, Keith B., Ph.D., MIT, 1977. Astronomy.
McClintock, William E., Ph.D., Johns Hopkins, 1977. Spectroscopy.
Rusch, David W., Ph.D., Colorado, 1972. Atmospheric physics.
Stewart, Glen R., Ph.D., UCLA, 1982. Planetary science.
Woods, Thomas N., Ph.D., Johns Hopkins, 1985. Solar physics.

RESEARCH SPECIALTIES AND STAFF

(Full-time faculty only)

Theoretical

- Astrophysics. Armitage, Begelman, Gnedin, Hamilton, McCray, Perna, Rast, Shull, Toomre, Zweibel.
 Atmospheric/Space Physics, Cosmic Rays. Bagenal, Baker, Ergun.
 Fluids and Rheology. Toomre.
 Planetary Science. Bagenal, Esposito, Pappalardo.

Experimental

- Astrophysics. Bally, Burns, Cash, Darling, Duncan, Ellingson, Glenn, Green, Halverson, Schneider, Shull, Snow, Stocke.
 Atmospheric/Space Physics, Cosmic Rays. Baker, Barth, Ergun, Esposito, Schneider.