THE ASTROPHYSICAL JOURNAL SUBJECT HEADINGS

Authors should select suitable keywords for their manuscripts using the list provided below.

No more than six headings should be given (and if headings are used for individual stars, galaxies, etc., each object normally counts as one heading). The overall categories (which are in capitals as headings in this list) should not be included. In addition, except for names of individual objects (see below), do not include any part of a heading that is enclosed in parentheses: thus, (stars:) binaries (including multiple): close should be given as binaries: close.

The headings should appear after the abstract, in alphabetical order, separated by em dashes (—), as in the following example:

Subject headings: Cepheids — galaxies: distances and redshifts — galaxies: individual (M100, NGC 4321) — stars: early-type

Headings such as galaxies: individual (..., ...) should include the individual names in parentheses, as shown above.

The editors of *ApJ*, *AJ*, *A&A*, *MNRAS*, *PASJ*, and *PASP* have adopted these headings for use in the indexes of the journals. Revisions and updating are made annually by agreement among the editors. If you believe that the list lacks an important heading, or that other revisions are needed, please send an e-mail message to: apj@as.arizona.edu. The list may be found on-line at http://www.journals.uchicago.edu/ApJ/information.html.

GENERAL

editorials, notices errata, addenda extraterrestrial intelligence history and philosophy of astronomy miscellaneous obituaries, biographies sociology of astronomy standards

PHYSICAL DATA AND PROCESSES

acceleration of particles accretion, accretion disks astrobiology astrochemistry atomic data atomic processes black hole physics conduction convection dense matter diffusion elementary particles equation of state gravitation gravitational lensing gravitational waves hydrodynamics instabilities line: formation line: identification

line: profiles magnetic fields (magnetohydrodynamics:) MHD masers molecular data molecular processes neutrinos nuclear reactions, nucleosynthesis, abundances plasmas polarization radiation mechanisms: general radiation mechanisms: nonthermal radiation mechanisms: thermal radiative transfer relativity scattering shock waves stellar dynamics turbulence waves ASTRONOMICAL INSTRUMENTATION,

ASTRONOMICAL INSTRUMENTATION, METHODS, AND TECHNIQUES

atmospheric effects balloons celestial mechanics instrumentation: adaptive optics instrumentation: detectors instrumentation: high angular resolution instrumentation: interferometers instrumentation: miscellaneous instrumentation: photometers instrumentation: polarimeters instrumentation: spectrographs methods: analytical methods: data analysis methods: laboratory methods: miscellaneous methods: N-body simulations methods: numerical methods: statistical site testing space vehicles space vehicles: instruments techniques: high angular resolution techniques: image processing techniques: interferometric techniques: miscellaneous techniques: photometric techniques: polarimetric techniques: radar astronomy techniques: radial velocities techniques: spectroscopic telescopes

ASTRONOMICAL DATABASES

astronomical databases: miscellaneous atlases catalogs surveys

ASTROMETRY AND CELESTIAL MECHANICS

astrometry eclipses ephemerides occultations reference systems time

THE SUN

Sun: abundances Sun: activity Sun: atmosphere Sun: atmospheric motions Sun: chromosphere Sun: corona Sun: coronal mass ejections Sun: evolution Sun: faculae, plages Sun: filaments Sun: flares Sun: fundamental parameters Sun: general Sun: granulation Sun: helioseismology Sun: infrared Sun: interior Sun: magnetic fields Sun: oscillations Sun: particle emission Sun: photosphere Sun: prominences

Sun: radio radiation Sun: rotation (Sun:) solar-terrestrial relations (Sun:) solar wind (Sun:) sunspots Sun: transition region Sun: UV radiation Sun: X-rays, gamma rays

SOLAR SYSTEM

comets: general comets: individual (..., ...) Earth interplanetary medium Kuiper belt meteors, meteoroids minor planets, asteroids Moon Oort cloud planets: rings planets and satellites: formation planets and satellites: general planets and satellites: individual (alphabetical order) solar system: formation solar system: general

STARS

stars: abundances stars: activity stars: AGB and post-AGB stars: atmospheres (stars:) binaries (including multiple): close (stars:) binaries: eclipsing (stars:) binaries: general (stars:) binaries: spectroscopic (stars:) binaries: symbiotic (stars:) binaries: visual (stars:) blue stragglers stars: carbon stars: chemically peculiar stars: chromospheres (stars:) circumstellar matter stars: coronae stars: distances stars: dwarf novae stars: early-type stars: emission-line, Be stars: evolution stars: flare stars: formation stars: fundamental parameters (classification, colors, luminosities, masses, radii, temperatures, etc.) stars: general (stars:) Hertzsprung-Russell diagram stars: horizontal-branch stars: imaging stars: individual (..., ...) stars: interiors stars: kinematics stars: late-type stars: low-mass, brown dwarfs stars: luminosity function, mass function

stars: magnetic fields stars: mass loss stars: neutron (stars:) novae, cataclysmic variables stars: oscillations (including pulsations) (stars:) planetary systems (stars:) planetary systems: formation (stars:) planetary systems: protoplanetary disks stars: Population II stars: pre-main-sequence (stars:) pulsars: general (stars:) pulsars: individual (..., ...) stars: rotation stars: spots stars: statistics (stars:) subdwarfs (stars:) supergiants (stars:) supernovae: general (stars:) supernovae: individual (..., ...) (stars: variables:) Cepheids (stars: variables:) δ Scuti stars: variables: other (stars:) white dwarfs stars: winds, outflows stars: Wolf-Rayet

INTERSTELLAR MEDIUM AND NEBULAE

ISM: abundances ISM: atoms ISM: bubbles ISM: clouds (ISM:) cosmic rays (ISM:) dust, extinction ISM: evolution ISM: general ISM: globules ISM: Herbig-Haro objects (ISM:) H II regions ISM: individual (..., ...) (except planetary nebulae) ISM: jets and outflows ISM: kinematics and dynamics ISM: lines and bands ISM: magnetic fields ISM: molecules (ISM:) planetary nebulae: general (ISM:) planetary nebulae: individual (..., ...) (ISM:) reflection nebulae ISM: structure (ISM:) supernova remnants

THE GALAXY

Galaxy: abundances Galaxy: bulge Galaxy: center Galaxy: disk Galaxy: evolution Galaxy: formation Galaxy: fundamental parameters Galaxy: general (Galaxy:) globular clusters: general (Galaxy:) globular clusters: individual (..., ...) Galaxy: halo Galaxy: kinematics and dynamics Galaxy: nucleus (Galaxy:) open clusters and associations: general (Galaxy:) open clusters and associations: individual (..., ...) (Galaxy:) solar neighborhood Galaxy: stellar content Galaxy: structure

GALAXIES

galaxies: abundances galaxies: active (galaxies:) BL Lacertae objects: general (galaxies:) BL Lacertae objects: individual (..., ...) galaxies: bulges galaxies: clusters: general galaxies: clusters: individual (..., ...) (galaxies:) cooling flows galaxies: distances and redshifts galaxies: dwarf galaxies: elliptical and lenticular, cD galaxies: evolution galaxies: formation galaxies: fundamental parameters (classification, colors, luminosities, masses, radii, etc.) galaxies: general galaxies: halos galaxies: high-redshift galaxies: individual (..., ...) galaxies: interactions (galaxies:) intergalactic medium galaxies: ISM galaxies: irregular galaxies: jets galaxies: kinematics and dynamics (galaxies:) Local Group galaxies: luminosity function, mass function (galaxies:) Magellanic Clouds galaxies: magnetic fields galaxies: nuclei galaxies: peculiar galaxies: photometry (galaxies:) quasars: absorption lines (galaxies:) quasars: emission lines (galaxies:) quasars: general (galaxies:) quasars: individual (..., ...) galaxies: Seyfert galaxies: spiral galaxies: starburst galaxies: star clusters galaxies: statistics galaxies: stellar content galaxies: structure

COSMOLOGY

(cosmology:) cosmic microwave background (cosmology:) cosmological parameters (cosmology:) dark matter (cosmology:) diffuse radiation (cosmology:) distance scale (cosmology:) early universe (cosmology:) large-scale structure of universe cosmology: miscellaneous cosmology: observations cosmology: theory

SOURCES AS A FUNCTION OF WAVELENGTH

gamma rays: bursts gamma rays: observations gamma rays: theory infrared: galaxies infrared: general infrared: ISM infrared: solar system infrared: stars radio continuum: galaxies radio continuum: ISM radio continuum: solar system radio continuum: stars radio lines: galaxies radio lines: general radio lines: ISM radio lines: solar system radio lines: stars submillimeter ultraviolet: galaxies ultraviolet: general ultraviolet: ISM ultraviolet: solar system ultraviolet: stars X-rays: binaries X-rays: bursts X-rays: diffuse background X-rays: galaxies X-rays: galaxies: clusters X-rays: general X-rays: individual (..., ...) X-rays: ISM X-rays: stars