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## The UCD1+ controlled vocabulary Version 1.11

### IVOA Recommendation 31 December 2005

**This version:**

<http://www.ivoa.net/Documents/REC/UCD/UCDlist-20051231.html>

**Latest version:**

<http://www.ivoa.net/Documents/latest/UCDlist.html>

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## Abstract

This document describes the list of controlled terms used to build the Unified Content Descriptors, Version 1+ (UCD1+).

The document describing the UCD1+ can be found at the URL:

<http://www.ivoa.net/Documents/latest/UCD.html>. This document reviews the structure of the UCD1+ and presents the current vocabulary.

## Status of this document

This is an IVOA Recommendation. The first release of this document (The UCD1+ controlled vocabulary Version 1.11) was 2005-12-31.

This document has been produced by the IVOA UCD Working Group.

A list of current IVOA Recommendations and other technical documents can be found at <http://www.ivoa.net/Documents/>.

## Acknowledgments

This document is based on the W3C documentation standards as adapted for the IVOA.

## 1 Definition of atoms and words

A UCD is a string which contains textual tokens called 'words', separated by semicolons(;). A word is composed of 'atoms', separated by periods(.). The hierarchy is as follows:

atoms --> words --> composed words

UCD1+ are either single words, or a composition of several words.

UCDs are "controlled" (through a process that is also indicated in the reference document above). Control is exercised at the level of words (UCD1+) and at the level of the vocabulary (atoms) used to form words. A consistent list of atoms will be maintained, making sure that the same atom always means the same thing, even if used in combination with different other atoms.

### 1.1 Definition of atoms

Atoms are defined following these guidelines:

1. Abbreviations are kept to a minimum, and only if the result is not ambiguous. (**ra**, **dec** are acceptable, but **t** is ambiguous: **time** and **temperature** are used instead.)

2. Atoms are not hyphenated. The separation is marked by a capital letter to help readability (position angle = **posAng**) unless the composed word has a well known acronym (signal to noise ratio = **snr**) or short form (standard deviation = **stdev**).

## 1.2 Definition of words

The list of UCD1+ words presented in this document was initially generated applying the rules and recommendations of PR-UCD-20040823 to catalogues/tables in Vizier. The original motivation was to transform old UCD1 into an improved version, trying to build a list of combinations of new words that could describe all the existing UCD1 terms.

The list of UCD1+ words is maintained by the UCD Scientific Board, following the procedure defined in the UCD Recommendation document (<http://www.ivoa.net/Documents/latest/UCD.html>), and described in detail in <http://www.ivoa.net/Documents/latest/UCDlistMaintenance.html> .

## 2 The structure of the UCD1+ tree

All existing UCD1+ words are grouped into 12 main categories. These categories are expressed by the first atom of the word, whose possible values are:

1. **arith** (arithmetics)

This section includes concepts involving or indicating some mathematical operation performed on the primary 'concept' or just the presence of an arithmetic factor or operator.

2. **em** (electromagnetic spectrum)

This section describes the electromagnetic spectrum, either in a monochromatic way or in predefined intervals. The complete list of proposed bands (in seven classical regions of the e.m. spectrum: radio, millimeter, infrared, optical, ultraviolet, x-ray and gamma-ray), can be found in the document [Note-EMSpectrum-20040520](#)

3. **instr** (instrument)

This section includes all quantities related to astronomical instrumentation, e.g. detectors (plates, CCDs, etc.), spectrographs, and telescopes (including observatories or missions), etc.

4. **meta** (metadata)

This section includes all the information that is not coming directly from a measurement, and information that could not be included in other sections.

5. **obs** (observation)

In principle under this section should go all words describing an observation (the name of the observer or PI, the observing conditions, the name of the field). In practice, the section is very 'thin' and could be deleted, if the sparse content could be housed elsewhere.

6. **phot** (photometry)

All the words describing photometric measures are included in this section. The definitions distinguish between a flux density (flux per unit frequency interval), a flux density integrated over a given e.m. interval (flux if expressed linearly, mag if expressed by a log), or a flux expressed in counts/s (if the setup of the detector is photon counting observing mode). ‘Colors’, which are differences of magnitudes (i.e. ratios of fluxes) measured in different bandpasses, are also included.

#### 7. **phys** (physics)

This section includes atomic and molecular data (mainly used for spectroscopy) and basic physical quantities (temperature, mass, gravity, luminosity, etc.)

#### 8. **pos** (positional data)

This section describes all quantities related to the position of an object on the sky:

- Angular coordinates, and projections from spherical to rectangular systems.
- Angular measurements in general (the angular size of an object is in this section, its linear size is in the **phys** section).
- The WCS FITS keywords.

#### 9. **spect** (spectral data)

For historical reasons, photometric data taken in narrow spectral bands with instruments called spectrographs are classified as spectroscopic data. These definitions should not be confused with those in the **em** category. **em** represents the independent variable, or dispersion axis, and **phot** and **spect** describe the dependent variable, or flux axis.

#### 10. **src** (source)

This is a rather generic section, mainly devoted to source classifications. Variability, orbital, and velocity data are also included in this section.

#### 11. **stat** (statistics)

This section includes statistical information on measurements.

#### 12. **time** (time)

Quantities related to time (age, date, period, etc.) are described in this section.

## A List of valid words

All words are preceded by a ‘syntax’ code that can help in the process of building composed UCD1+.

1. The code “P” means that the word can only be used as “primary” or first word;
2. “S” stands for only secondary: the word cannot be used as the first word to describe a single quantity;
3. “Q” means that the word can be used indifferently as first or secondary word;

4. "E" means a photometric quantity, and can be followed by a word describing a part of the electromagnetic spectrum
5. "C" is a colour index, and can be followed by two successive word describing a part of the electromagnetic spectrum;
6. "V" stands for vector. Such a word can be followed by another describing the axis or reference frame in which the measurement is done

Q		arith		Arithmetic quantities
S		arith.diff		Difference between two quantities
described by the same UCD				
P		arith.factor		Numerical factor
P		arith.grad		Gradient
P		arith.rate		Rate (per time unit)
S		arith.ratio		Ratio between two quantities
described by the same UCD				
Q		arith.zp		Zero point
S		em		Electromagnetic spectrum
S		em.IR		Infrared part of the spectrum
S		em.IR.15-30um		Infrared between 15 and 30 micron
S		em.IR.3-4um		Infrared between 3 and 4 micron
S		em.IR.30-60um		Infrared between 30 and 60 micron
S		em.IR.4-8um		Infrared between 4 and 8 micron
S		em.IR.60-100um		Infrared between 60 and 100 micron
S		em.IR.8-15um		Infrared between 8 and 15 micron
S		em.IR.H		Infrared between 1.5 and 2 micron
S		em.IR.J		Infrared between 1.0 and 1.5 micron
S		em.IR.K		Infrared between 2 and 3 micron
S		em.UV		Ultraviolet part of the spectrum
S		em.UV.10-50nm		Ultraviolet between 10 and 50 nm
S		em.UV.100-200nm		Ultraviolet between 100 and 200 nm
S		em.UV.200-300nm		Ultraviolet between 200 and 300 nm
S		em.UV.50-100nm		Ultraviolet between 50 and 100 nm
S		em.X-ray		X-ray part of the spectrum
S		em.X-ray.hard		Hard X-ray (12 - 120 keV)
S		em.X-ray.medium		Medium X-ray (2 - 12 keV)
S		em.X-ray.soft		Soft X-ray (0.12 - 2 keV)
Q		em.energy		Energy value in the em frame
Q		em.freq		Frequency value in the em frame
S		em.gamma		Gamma rays part of the spectrum
S		em.gamma.hard		Hard gamma ray (>500 keV)
S		em.gamma.soft		Soft gamma ray (120 - 500 keV)
S		em.line		Designation of major atomic lines
S		em.line.Brgamma		Bracket gamma line
S		em.line.HI		21cm hydrogen line
S		em.line.Halpha		H-alpha line
S		em.line.Hbeta		H-beta line
S		em.line.Hgamma		H-gamma line
S		em.line.OIII		[OIII] line
S		em.mm		Millimetric part of the spectrum
S		em.mm.100-200GHz		Millimetric between 100 and 200 GHz
S		em.mm.1500-3000GHz		Millimetric between 1500 and 3000
GHz				
S		em.mm.200-400GHz		Millimetric between 200 and 400 GHz
S		em.mm.30-50GHz		Millimetric between 30 and 50 GHz
S		em.mm.400-750GHz		Millimetric between 400 and 750 GHz
S		em.mm.50-100GHz		Millimetric between 50 and 100 GHz
S		em.mm.750-1500GHz		Millimetric between 750 and 1500
GHz				
S		em.opt		Optical part of the spectrum
S		em.opt.B		Optical band between 400 and 500 nm

S	em.opt.I	Optical band between 750 and 1000
nm		
S	em.opt.R	Optical band between 600 and 750 nm
S	em.opt.U	Optical band between 300 and 400 nm
S	em.opt.V	Optical band between 500 and 600 nm
S	em.radio	Radio part of the spectrum
S	em.radio.100-200MHz	Radio between 100 and 200 MHz
S	em.radio.12-30GHz	Radio between 12 and 30 GHz
S	em.radio.1500-3000MHz	Radio between 1500 and 3000 MHz
S	em.radio.20-100MHz	Radio between 20 and 100 MHz
S	em.radio.200-400MHz	Radio between 200 and 400 MHz
S	em.radio.3-6GHz	Radio between 3 and 6 GHz
S	em.radio.400-750MHz	Radio between 400 and 750 MHz
S	em.radio.6-12GHz	Radio between 6 and 12 GHz
S	em.radio.750-1500MHz	Radio between 750 and 1500 MHz
Q	em.wavenumber	Wavenumber value in the em frame
Q	em.wl	Wavelength value in the em frame
Q	em.wl.central	Central wavelength
Q	em.wl.effective	Effective wavelength
Q	instr	Instrument
E	instr.background	Instrumental background
Q	instr.bandpass	Bandpass (e.g.: band name) of
instrument		
Q	instr.bandwidth	Bandwidth of the instrument
Q	instr.baseline	Baseline for interferometry
S	instr.beam	Beam
Q	instr.calib	Calibration parameter
S	instr.det	Detector
Q	instr.det.noise	Instrument noise
Q	instr.det.psf	Point Spread Function
Q	instr.det.qe	Quantum efficiency
Q	instr.dispersion	Dispersion of a spectrograph
S	instr.filter	Filter
S	instr.fov	Field of view
S	instr.obsty	Observatory, satellite, mission
Q	instr.obsty.seeing	Seeing
Q	instr.offset	Offset angle respect to main
direction of observation		
Q	instr.order	Spectral order in a spectrograph
Q	instr.param	Various instrumental parameters
S	instr.pixel	Pixel (default size: angular)
S	instr.plate	Photographic plate
Q	instr.plate.emulsion	Plate emulsion
Q	instr.precision	Instrument precision
Q	instr.saturation	Instrument saturation threshold
Q	instr.scale	Instrument scale (for CCD, plate,
image)		
Q	instr.sensitivity	Instrument sensitivity, detection
threshold		
Q	instr.setup	Instrument configuration or setup
Q	instr.skyLevel	Sky level
Q	instr.skyTemp	Sky temperature
Q	instr.tel	Telescope
Q	instr.tel.focalLength	Telescope focal length
P	meta	Metadata
P	meta.bib	Bibliographic reference
P	meta.bib.author	Author name
P	meta.bib.bibcode	Bibcode
P	meta.bib.fig	Figure in a paper
P	meta.bib.journal	Journal name
P	meta.bib.page	Page number
P	meta.bib.volume	Volume number
P	meta.code	Code or flag

P		meta.code.class		Classification code
P		meta.code.error		limit uncertainty error flag
P		meta.code.member		Membership code
P		meta.code.mime		MIME type
P		meta.code.multip		Multiplicity or binarity flag
P		meta.code.qual		Quality, precision, reliability
		flag or code		
P		meta.cryptic		Unknown or impossible to understand
		quantity		
P		meta.curation		Identity of man/organization
		responsible for the data		
Q		meta.dataset		Dataset
S		meta.file		File
S		meta.fits		FITS standard
P		meta.id		Identifier, name or designation
P		meta.id.assoc		Identifier of associated
		counterpart		
P		meta.id.cross		Cross identification
P		meta.id.parent		Identification of parent source
P		meta.id.part		Part of identifier, suffix or sub-
		component		
S		meta.main		Main value of something
S		meta.modelled		Quantity was produced by a model
P		meta.note		Note or remark (longer than a code
		or flag)		
P		meta.number		Number (of things; e.g. nb of
		object in an image)		
P		meta.record		Record number
P		meta.ref		Reference, or origin
P		meta.ref.url		URL, web address
S		meta.software		Software used in generating data
S		meta.table		Table or catalogue
P		meta.title		Title or explanation
Q		meta.ucd		UCD
P		meta.unit		Unit
P		meta.version		Version
S		obs		Observation
Q		obs.airMass		Airmass
S		obs.atmos		Atmosphere
Q		obs.atmos.extinction		Atmospheric extinction
Q		obs.atmos.refractAngle		Atmospheric refraction angle
S		obs.calib		Calibration observation
S		obs.field		Region covered by the observation
S		obs.image		Image
Q		obs.observer		Observer, discoverer
Q		obs.param		Various observation or reduction
		parameter		
E		phot		Photometry
E		phot.antennaTemp		Antenna temperature
Q		phot.calib		Photometric calibration
C		phot.color		Color index or magnitude difference
Q		phot.color.excess		Color excess
Q		phot.color.reddFree		Dereddened color
E		phot.count		Flux expressed in counts
E		phot.fluence		Fluence
E		phot.flux		Photon flux
Q		phot.flux.bol		Bolometric flux
E		phot.flux.density		Flux density (per wl/freq/energy
		interval)		
E		phot.flux.density.sb		Flux density surface brightness
E		phot.flux.sb		Flux surface brightness
E		phot.limbDark		Limb-darkening coefficients
E		phot.mag		Photometric magnitude

Q	phot.mag.bc	Bolometric correction
Q	phot.mag.bol	Bolometric magnitude
Q	phot.mag.distMod	Distance modulus
E	phot.mag.reddFree	Dereddened magnitude
E	phot.mag.sb	Surface brightness in magnitude
units		
Q	phys	Physical quantities
Q	phys.SFR	Star formation rate
E	phys.absorption	Extinction or absorption along the
line of sight		
Q	phys.absorption.coeff	Absorption coefficient (e.g. in a
spectral line)		
Q	phys.absorption.gal	Galactic extinction
Q	phys.absorption.opticalDepth	Optical depth
Q	phys.abund	Abundance
Q	phys.abund.Fe	Fe/H abundance
Q	phys.abund.X	Hydrogen abundance
Q	phys.abund.Y	Helium abundance
Q	phys.abund.Z	Metallicity abundance
Q	phys.acceleration	Acceleration
Q	phys.albedo	Albedo or reflectance
Q	phys.angArea	Angular area
Q	phys.angMomentum	Angular momentum
Q	phys.angSize	Angular size width diameter
dimension extension major minor axis extraction radius		
Q	phys.angSize.smajAxis	Angular size extent or extension of
semi-major axis		
Q	phys.angSize.sminAxis	Angular size extent or extension of
semi-minor axis		
Q	phys.area	Area (in linear units)
Q	phys.atmol	Atomic and molecular physics
Q	phys.atmol.branchingRatio	Branching ratio
Q	phys.atmol.collStrength	Collisional strength
Q	phys.atmol.collisional	Related to collisions
Q	phys.atmol.configuration	Configuration
Q	phys.atmol.crossSection	Atomic / molecular cross-section
Q	phys.atmol.damping	Atomic damping quantities (van der
Waals)		
Q	phys.atmol.element	Element
Q	phys.atmol.excitation	Atomic molecular excitation
parameter		
Q	phys.atmol.final	Quantity refers to atomic/molecular
final/ground state, level, ecc.		
Q	phys.atmol.initial	Quantity refers to atomic/molecular
initial state, level, ecc.		
Q	phys.atmol.ionStage	Ion
S	phys.atmol.ionization	Related to ionization
Q	phys.atmol.lande	Lande factor
S	phys.atmol.level	Atomic level
Q	phys.atmol.lifetime	Lifetime of a level
Q	phys.atmol.lineShift	Line shifting coefficient
Q	phys.atmol.number	Atomic number Z
Q	phys.atmol.oscStrength	Oscillator strength
Q	phys.atmol.parity	Parity
Q	phys.atmol.qn	Atomic quantum number
Q	phys.atmol.qn.I	Nuclear spin quantum number
Q	phys.atmol.radiationType	Type of radiation characterizing
atomic lines (electric dipole/quadrupole, magnetic dipole)		
Q	phys.atmol.sweight	Statistical weight
Q	phys.atmol.term	Atomic term
Q	phys.atmol.transProb	Atomic transition probability,
Einstein A coefficient		
S	phys.atmol.transition	Transition between states

Q		phys.atmol.wOscStrength		Weighted oscillator strength
Q		phys.atmol.weight		Atomic weight
Q		phys.columnDensity		Column density
S		phys.composition		Quantities related to composition
of		objects		
Q		phys.composition.massLightRatio		Mass to light ratio
Q		phys.composition.yield		Mass yield
Q		phys.density		Density (of mass, electron, ...)
Q		phys.dielectric		Complex dielectric function
Q		phys.dispMeasure		Dispersion measure
V		phys.electField		Electric field
S		phys.electron		Electron
Q		phys.electron.degen		Electron degeneracy parameter
Q		phys.emissMeasure		Emission measure
Q		phys.emissivity		Emissivity
Q		phys.energy		Energy
Q		phys.energy.density		Energy-density
Q		phys.eos		Equation of state
Q		phys.excitParam		Excitation parameter U
Q		phys.gauntFactor		Gaunt factor/correction
Q		phys.gravity		Gravity
Q		phys.ionizParam		Ionization parameter
Q		phys.ionizParam.coll		Collisional ionization
Q		phys.ionizParam.rad		Radiative ionization
E		phys.luminosity		Luminosity
Q		phys.luminosity.fun		Luminosity function
E		phys.magAbs		Absolute magnitude
Q		phys.magAbs.bol		Bolometric absolute magnitude
V		phys.magField		Magnetic field
Q		phys.mass		Mass
Q		phys.mass.loss		Mass loss
Q		phys.mol		Molecular data
Q		phys.mol.dipole		Molecular dipole
Q		phys.mol.dipole.electric		Molecular electric dipole moment
Q		phys.mol.dipole.magnetic		Molecular magnetic dipole moment
Q		phys.mol.dissociation		Molecular dissociation
Q		phys.mol.formationHeat		Formation heat for molecules
Q		phys.mol.qn		Molecular quantum numbers
Q		phys.mol.quadrupole		Molecular quadrupole
Q		phys.mol.quadrupole.electric		Molecular electric quadrupole
moment				
S		phys.mol.rotation		Molecular rotation
S		phys.mol.vibration		Molecular vibration
Q		phys.polarization		Polarization degree (or percentage)
Q		phys.polarization.circular		Circular polarization
Q		phys.polarization.linear		Linear polarization
Q		phys.polarization.rotMeasure		Rotation measure polarization
Q		phys.polarization.stokes		Stokes polarization
Q		phys.pressure		Pressure
Q		phys.recombination.coeff		Recombination coefficient
Q		phys.refractIndex		Refraction index
Q		phys.size		Size (not angular)
Q		phys.size.axisRatio		Axis ratio (a/b) or (b/a)
Q		phys.size.diameter		Diameter
Q		phys.size.radius		Radius
Q		phys.size.smajAxis		Linear semi major axis
Q		phys.size.sminAxis		Linear semi minor axis
Q		phys.temperature		Temperature
Q		phys.temperature.effective		Effective temperature
Q		phys.temperature.electron		Electron temperature
Q		phys.transmission		Transmission (of filter,
instrument, ...)				
V		phys.veloc		Space velocity

Q		phys.veloc.ang		Angular velocity
Q		phys.veloc.dispersion		Velocity dispersion
Q		phys.veloc.escape		Escape velocity
Q		phys.veloc.expansion		Expansion velocity
Q		phys.veloc.microTurb		Microturbulence velocity
Q		phys.veloc.orbital		Orbital velocity
Q		phys.veloc.pulsat		Pulsational velocity
Q		phys.veloc.rotat		Rotational velocity
Q		phys.veloc.transverse		Transverse / tangential velocity
Q		pos		Position and coordinates
Q		pos.angDistance		Angular distance, elongation
Q		pos.angResolution		Angular resolution
Q		pos.az		Position in alt-azimutal frame
Q		pos.az.alt		Alt-azimutal altitude
Q		pos.az.azi		Alt-azimutal azimuth
Q		pos.az.zd		Alt-azimutal zenith distance
S		pos.barycenter		Barycenter
S		pos.bodyrc		Body related coordinates
Q		pos.bodyrc.alt		Body related coordinate (altitude
on the body)				
Q		pos.bodyrc.lat		Body related coordinate (latitude
on the body)				
Q		pos.bodyrc.long		Body related coordinate (longitude
on the body)				
S		pos.cartesian		Cartesian (rectangular) coordinates
Q		pos.cartesian.x		Cartesian coordinate along the x-
axis				
Q		pos.cartesian.y		Cartesian coordinate along the y-
axis				
Q		pos.cartesian.z		Cartesian coordinate along the z-
axis				
S		pos.cmb		Cosmic Microwave Background
reference frame				
Q		pos.dirCos		Direction cosine
V		pos.distance		Linear distance
S		pos.earth		Coordinates related to Earth
Q		pos.earth.altitude		Altitude, height on Earth above
sea level				
Q		pos.earth.lat		Latitude on Earth
Q		pos.earth.lon		Longitude on Earth
S		pos.ecliptic		Ecliptic coordinates
Q		pos.ecliptic.lat		Ecliptic latitude
Q		pos.ecliptic.lon		Ecliptic longitude
S		pos.eop		Earth orientation parameters
Q		pos.eop.nutation		Earth nutation
Q		pos.ephem		Ephemeris
S		pos.eq		Equatorial coordinates
Q		pos.eq.dec		Declination in equatorial
coordinates				
Q		pos.eq.ha		Hour-angle
Q		pos.eq.ra		Right ascension in equatorial
coordinates				
Q		pos.eq.spd		South polar distance in equatorial
coordinates				
S		pos.errorEllipse		Positional error ellipse
Q		pos.frame		Reference frame used for positions
S		pos.galactic		Galactic coordinates
Q		pos.galactic.lat		Latitude in galactic coordinates
Q		pos.galactic.lon		Longitude in galactic coordinates
S		pos.galactocentric		Galactocentric coordinate system
S		pos.geocentric		Geocentric coordinate system
Q		pos.healpix		Hierarchical Equal Area IsoLatitude
Pixelization				

S		pos.heliocentric (solar system bodies)		Heliocentric position coordinate
Q		pos.HTM		Hierarchical Triangular Mesh
S		pos.lambert		Lambert projection
S		pos.lg		Local Group reference frame
S		pos.lsr frame		Local Standard of Rest reference
Q		pos.lunar		Lunar coordinates
Q		pos.lunar.occult		Occultation by lunar limb
Q		pos.parallax		Parallax
Q		pos.parallax.dyn		Dynamical parallax
Q		pos.parallax.phot		Photometric parallaxes
Q		pos.parallax.spect		Spectroscopic parallax
Q		pos.parallax.trig		Trigonometric parallax
Q		pos.phaseAng		Phase angle, e.g. elongation of
		earth from sun as seen from a third cel.		object
V		pos.pm		Proper motion
Q		pos.posAng		Position angle of a given vector
V		pos.precess coordinates)		Precession (in equatorial
S		pos.supergalactic		Supergalactic coordinates
Q		pos.supergalactic.lat coordinates		Latitude in supergalactic
Q		pos.supergalactic.lon coordinates		Longitude in supergalactic
P		pos.wcs		WCS keywords
P		pos.wcs.cdmatrix		WCS CDMATRIX
P		pos.wcs.crpix		WCS CRPIX
P		pos.wcs.crval		WCS CRVAL
P		pos.wcs.ctype		WCS CTYPE
P		pos.wcs.naxes		WCS NAXES
P		pos.wcs.naxis		WCS NAXIS
P		pos.wcs.scale		WCS scale or scale of an image
Q		spect		Spectroscopy
Q		spect.dopplerParam		Doppler parameter b
E		spect.dopplerVeloc shift of some spectral feature		Radial velocity, derived from the
E		spect.dopplerVeloc.opt wavelength shift using the optical convention		Radial velocity derived from a
E		spect.dopplerVeloc.radio frequency shift using the radio convention		Radial velocity derived from a
E		spect.index		Spectral index
E		spect.line		Spectral line
E		spect.line.asymmetry		Line asymmetry
E		spect.line.broad		Spectral line broadening
Q		spect.line.broad.Stark		Stark line broadening coefficient
E		spect.line.broad.Zeeman		Zeeman broadening
E		spect.line.eqWidth		Line equivalent width
E		spect.line.intensity		Line intensity
E		spect.line.profile		Line profile
E		spect.line.width		Spectral line fwhm
Q		spect.resolution		Spectral (or velocity) resolution
S		src		Observed source viewed on the sky
Q		src.class galaxy, cluster...)		Source classification (star,
Q		src.class.color		Color classification
Q		src.class.distance		Distance class e.g. Abell
Q		src.class.luminosity		Luminosity class
Q		src.class.richness		Richness class e.g. Abell
Q		src.class.starGalaxy stellarity index		Star/galaxy discriminator,
Q		src.class.struct Bautz-Morgan		Structure classification e.g.

Q		src.density		Density of sources
Q		src.ellipticity		Source ellipticity
Q		src.impactParam		Impact parameter
Q		src.morph		Morphology structure
Q		src.morph.param		Morphological parameter
Q		src.morph.scLength		Scale length for a galactic
		component (disc or bulge)		
Q		src.morph.type		Hubble morphological type
		(galaxies)		
Q		src.orbital		Orbital parameters
Q		src.orbital.eccentricity		Orbit eccentricity
Q		src.orbital.inclination		Orbit inclination
Q		src.orbital.meanAnomaly		Orbit mean anomaly
Q		src.orbital.meanMotion		Mean motion
Q		src.orbital.node		Ascending node
Q		src.orbital.periastron		Periastron
Q		src.redshift		Redshift
Q		src.redshift.phot		Photometric redshift
Q		src.sample		Sample
Q		src.spType		Spectral type MK
Q		src.var		Variability of source
E		src.var.amplitude		Amplitude of variation
Q		src.var.index		Variability index
Q		src.var.pulse		Pulse
Q		stat		Statistical parameters
Q		stat.Fourier		Fourier coefficient
Q		stat.Fourier.amplitude		Amplitude Fourier coefficient
P		stat.correlation		Correlation between two parameters
P		stat.covariance		Covariance between two parameters
P		stat.error		Statistical error
P		stat.error.sys		Systematic error
Q		stat.fit		Fit
P		stat.fit.chi2		Chi2
P		stat.fit.dof		Degrees of freedom
P		stat.fit.goodness		Goodness or significance of fit
S		stat.fit.omc		Observed minus computed
Q		stat.fit.param		Parameter of fit
P		stat.fit.residual		Residual fit
P		stat.likelihood		Likelihood
S		stat.max		Maximum or upper limit
S		stat.mean		Mean, average value
S		stat.median		Median value
S		stat.min		Minimum or lowest limit
Q		stat.param		Parameter
P		stat.snr		Signal to noise ratio
P		stat.stdev		Standard deviation
Q		stat.value		Miscellaneous value
P		stat.variance		Variance
P		stat.weight		Statistical weight
Q		time		Time
Q		time.age		Age
Q		time.crossing		Crossing time
Q		time.epoch		Epoch, julian date
Q		time.equinox		Equinox
Q		time.event		Duration of an event or phenomenon
Q		time.event.end		End time of event or phenomenon
Q		time.event.start		Start time of event or phenomenon
Q		time.expo		Exposure on-time, duration
Q		time.expo.end		End time of exposure
Q		time.expo.start		Start time of exposure
Q		time.interval		Interval of time
Q		time.lifetime		Lifetime
Q		time.obs		Observation on-time, duration

Q		time.obs.end		End time of observation
Q		time.obs.start		Start time of observation
Q		time.period		Period
Q		time.phase		Phase
Q		time.relax		Relaxation time
Q		time.resolution		Time resolution
Q		time.scale		Timescale

## B Changes from previous versions

### Changes from v0.1

1. Descriptions of the words were improved.
2. Designation of commonly used lines have been moved to **em.line.\***. As a consequence, terms like **em.IR.K.Brgamma** or **spect.index.Hbeta** have been removed.
3. **phys.at** and **phys.mol** have been completely reorganized to improve the overall description of this domain. A new branch **phys.atmol** has been introduced to group concepts shared between **phys.at** and **phys.mol**.
4. The **phot.color** section was significantly simplified.
5. Missing nodes of the tree were added (e.g. **em.gamma**, **em.mm**, **pos.sg**).
6. Creation of new words: **em.wavenumber**, **meta.ucd**, **stat.error.sys**
7. Typos were corrected in **em.opt.\*** units and a few other descriptions.

### Changes from v0.2

1. Section 1.2 has been simplified
2. 3 new syntax codes (E, C, V) have been introduced, and described in appendix A
3. The following words have been renamed :

Deprecated UCD	New corresponding UCD
em.line.21cm	em.line.HI
instr.ang-res	instr.angRes
instr.sky-level	instr.skyLevel
instr.sky-temp	instr.skyTemp
instr.antenna-temp	phot.antennaTemp
phys.absorption.gf	phys.gauntFactor
phys.at.einstein	phys.at.transProb
phys.at.level	phys.atmol.level
phys.dispMeas	phys.dispMeasure
phys.distance	pos.distance
phys.polarization.rotMeas	phys.polarization.rotMeasure
phys.size.area	phys.area
pos.ang.separation	pos.angDistance
pos.ec	pos.ecliptic
pos.ec.lat	pos.ecliptic.lat
pos.ec.lon	pos.ecliptic.lon
pos.ee	pos.errorEllipse
pos.gal	pos.galactic
pos.gal.lat	pos.galactic.lat
pos.gal.lon	pos.galactic.lon
pos.sg	pos.supergalactic
pos.sg.lat	pos.supergalactic.lat
pos.sg.lon	pos.supergalactic.lon
src.class.star-galaxy	src.class.starGalaxy

- The following words have been created: instr.beam, meta.code.error, meta.id.part, phot.flux.sb, phys.angArea, phys.angSize, phys.angSize.smaJAxis, phys.angSize.sminAxis, phys.area, phys.at.damping, phys.at.weight, phys.atmol.excitation, phys.mol.dissociation, phys.recombination.coeff, phys.size.smaJAxis, phys.size.sminAxis, pos.cartesian, pos.cartesian.x, pos.cartesian.y, pos.cartesian.z, pos.distance, pos.eq.spd, pos.galactocentric, pos.geocentric, pos.healpix, pos.heliocentric, pos.HTM, pos.lambert, pos.satellite, spect.line.broad.Stark, spect.veloc, src.redshift.phot, stat.correlation, time.lifetime
- Some words have been removed. The following table summarizes, when relevant, the suggested replacement to be used.

Deprecated UCD	New corresponding UCD
instr.area	phys.area;instr
instr.beam-width	phys.angSize;instr.beam
meta.table.axis	phys.size;meta.table
phot.color.Cous	phot.color
phot.color.Gen	phot.color
phot.color.Gunn	phot.color
phot.color.JHN	phot.color
phot.color.STR	phot.color
phot.color.STR.c1	phot.color
phot.color.STR.b-y	phot.color
phot.color.STR.m1	phot.color
phys.at.lineBroad	spect.line.broad
phys.distance.compon	pos.distance;pos.cartesian.x (or y, z)
phys.distance.gc	pos.distance;pos.galactocentric
phys.electron.energy	phys.energy;phys.electron
phys.extension	phys.angSize or phys.size
phys.mass.fraction	phys.mass;arith.ratio
phys.polarization.posAng	pos.posAng;phys.polarization
pos.ang	
pos.det	pos.cartesian;instr.det
pos.eq.dec.arcsec	
pos.eq.ra.minutes	
pos.eq.ra.seconds	
pos.gal.compon	pos.cartesian;pos.galactic
pos.pm.dec	pos.pm;pos.eq.dec
pos.pm.ra	pos.pm;pos.eq.ra
pos.precess.dec	pos.precess;pos.eq.dec
pos.precess.ra	pos.precess;pos.eq.ra
pos.proj	
pos.sg.compon	pos.cartesian;pos.supergalactic
src.orbital.energy	phys.energy;src.orbital
src.orbital.separation	pos.angDistance;src.orbital
src.orbital.size	phys.size;src.orbital
src.separation	pos.angDistance;src
src.veloc.compon	src.veloc;pos.cartesian
src.veloc.gc	src.veloc;pos.galactocentric
src.veloc.geoc	src.veloc;pos.geocentric
src.veloc.hc	src.veloc;pos.heliocentric

## Changes from v1.00

- Descriptions have been changed for the following words: em.IR.H, em.IR.J, em.IR.K, em.X-ray.hard, em.X-ray.medium, em.X-ray.soft, em.gamma.hard, em.gamma.soft, em.opt.B, em.opt.I, em.opt.R, em.opt.U, em.opt.V, instr.bandpass, phot.count, phys.density, phys.mol.dipole.electric, phys.mol.dipole.magnetic, phys.mol.quadrupole.electric, pos.angDistance, pos.precess, src, src.class.distance, src.class.richness, src.class.starGalaxy, src.class.struct, time.expo, time.expo.end, time.expo.start, time.interval

2. The following words have been deprecated:

Deprecated UCD	New corresponding UCD
instr.angRes	pos.resolution
instr.obsty.site	pos.earth.altitude;instr.obsty
instr.obsty.site.seeing	instr.obsty.seeing
instr.spect	instr
instr.spect.dispersion	instr.dispersion
instr.spect.order	instr.order
instr.spect.resolution	spect.resolution
instr.tel.focus	instr.tel.focalLength
meta.fits.software	meta.software
obs.air	obs.atmos
obs.air.extinction	obs.atmos.extinction
obs.air.mass	obs.airMass
phot.fluxDens	phot.fluDens
phot.fluxDens.sb	phot.fluDens.sb
phot.sb	phot.mag.sb
phys.at.branchingRatio	phys.atmol.branchingRatio
phys.at.crossSection	phys.atmol.crossSection
phys.at.lineShift	phys.atmol.lineShift
phys.at.moment	
phys.at.moment.electric	phys.at.radiationType
phys.at.moment.magnetic	phys.at.radiationType
phys.at.qn.S	phys.at.qn
phys.at.qn.L	phys.at.qn
phys.at.qn.J	phys.at.qn
phys.at.qn.F	phys.at.qn
phys.atmol.state.final	phys.atmol.final
phys.atmol.state.initial	phys.atmol.initial
phys.massYield	phys.mYield
phys.mol.quadrupole.magnetic	phys.at.radiationType
phys.refraction	phys.refractIndex
pos.az.ha	pos.eq.ha
pos.earth.nutation	pos.eop.nutation
spect.veloc	spect.dopplerVeloc
src.fwhm	phys.angSize;src
src.orbital.veloc	phys.veloc.orbital
src.veloc	phys.veloc
src.veloc.ang	phys.veloc.ang
src.veloc.cmb	phys.veloc;pos.cmb
src.veloc.dispersion	phys.veloc.dispersion
src.veloc.escape	phys.veloc.escape
src.veloc.expansion	phys.veloc.expansion
src.veloc.lg	phys.veloc;pos.lg
src.veloc.lsr	phys.veloc;pos.lsr
src.veloc.microTurb	phys.veloc.microTurb
src.veloc.pulsat	phys.veloc.pulsat
src.veloc.rotat	phys.veloc.rotat

3. The syntax flags changed for words: instr.fov, instr.obsty, meta.file, phys.angSize, pos.cartesian, stat.fit.omc
4. The following words have been created: instr.dispersion, instr.order, instr.tel.focalLength, meta.curation, meta.software, meta.version, obs.atmos, obs.atmos.extinction, obs.airMass, obs.atmos.refractAngle, obs.calib, phys.at.radiationType, phys.atmol.branchingRatio, phys.atmol.crossSection, phys.atmol.lifetime, phys.atmol.lineShift, phys.energyDensity, phys.refractIndex, phys.transmission, pos.eq.ha, pos.az.azi, pos.bodyrc, pos.cmb, pos.earth.altitude, pos.eop, pos.eop.nutation, pos.lg, pos.lsr, pos.phaseAng, pos.resolution, spect.resolution, spect.dopplerVeloc, spect.dopplerVeloc.radio, spect.dopplerVeloc.opt, src.orbital.meanMotion, phys.veloc, phys.veloc.ang, phys.veloc.dispersion, phys.veloc.escape, phys.veloc.expansion, phys.veloc.microTurb, phys.veloc.orbital, phys.veloc.pulsat, phys.veloc.rotat, phys.veloc.transverse, time.obs, time.obs.end, time.obs.start

## Changes from v1.01

1. The following words have been restored to their previous spelling (v1.00): phot.fluDensity, phys.energyDensity, phys.mYield, phot.fluxDensity, phys.energyDensity, phys.massYield

A note has been added to indicate that these words do not strictly comply with the UCD1+ Rec.

## Changes from v1.02

1. Descriptions have been changed for the following words: em.line, instr.pixel, phys.gravity, pos.earth.altitude
2. The syntax flags changed for words: instr.filter, phys.angSize
3. The following words have been deprecated:

Deprecated UCD	New corresponding UCD
instr.filter.transm	phys.transm;instr.filter
phys.mass.light	phys.massToLight
pos.resolution	pos.angResolution
pos.satellite	pos.bodyrc

4. The following words have been created: phys.polarization.circular, phys.polarization.linear, phys.size.axisRatio, pos.bodyrc.alt, pos.bodyrc.lat, pos.bodyrc.long, time.event, time.event.end, time.event.start

## Changes from v1.10

1. A few minor changes to the text have been done
2. All UCD words are now compliant with the UCD recommendation. The corresponding changes are described below
3. The following words have been deprecated:

Deprecated UCD	New corresponding UCD
phot.fluxDens	phot.flux.density
phot.fluxDens.sb	phot.flux.density.sb
<b>phys.at*</b>	<b>phys.atmol*</b>
phys.atmol.coll	phys.atmol.collisional
phys.atmol.ion	phys.atmol.ionStage
phys.atmol.trans	phys.atmol.transition
phys.energyDensity	phys.energy.density
phys.massToLight	phys.composition.massLightRatio
phys.massYield	phys.composition.yield
spect.doppler	spect.dopplerParam

4. The following word has been created: phys.composition
5. The section *Changes from previous versions* has been reformatted