The UCD1+ controlled vocabulary Version 0.2

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This version:
http://www.ivoa.net/internal/IVOA/IvoaUCD/WD-UCDlist-20040823.html

Latest version:
http://www.ivoa.net/Documents/latest/UCDlist.html

Previous versions:
http://www.ivoa.net/internal/IVOA/IvoaUCD/WD-UCDlist-20040520.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 current proposal for a new set of UCD called UCD1+ can be found at the url: http://www.ivoa.net/Documents/PR/UCD/UCD-20040823.html. Here we briefly recall the structure of the proposed UCD1+ and the origin of the present lists.

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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(.). So the hierarchy is the following:

$$\text{atoms} \longrightarrow \text{words} \longrightarrow \text{composed words}$$

UCD1+ are either single words, or composed words.

UCDs should be "controlled" (through a process that is also indicated in the PR referenced above). Control should be exercised at the level of words (ucd1+) but also at the level of the vocabulary (atoms) used to form words. A consistent list of atoms should be mantained, making sure that the same atom means always the same thing, even if used in combination with different other atoms.

1.1 Definition of atoms

Atoms were defined following these guidelines:

1. abbreviations are kept to a minimum, and only if the result is not ambiguous (**ra**, **dec** are OK, but **t** is ambiguous: we use **time** and **temperature** 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 generated applying the rules and recommendations of PR-UCD-20040823 to VizieR. The original motivation was to transform UCD1 into an improved version, trying to build a list of combinations of new words that could describe all the existing UCD1 terms.

The procedure that was used was the following:

- Step 1. Select a UCD1.
- Step 2. Get summary information, e.g.:
    - UCD1 description
    - list of catalogues/tables using that UCD1
    - list of column names associated to UCD1
    - list of units used for those columns
- Step 3. Assess the consistency of this summary information. If in doubt,
- Step 4. Get detailed information on catalogues/tables/columns descriptions.
- Step 5. Assign UCD1+.

If the consistency test at Steps 3 was positive, a new UCD1+ was defined, and assigned to all columns described by old UCD1. If detailed additional information was necessary (Step 4), new UCD1+ were assigned to each column and then the results were grouped into "n" new

UCD1+s. Eventually, all the columns in VizieR had a new UCD1+ assigned to them. This is slightly different from saying: "this column in this catalog is assigned this UCD1+" because the result of a UCD1+ assignation procedure applied to all columns could lead in some cases to more precise UCD1+ or to new ones.

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)
   We include in this section 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)
   In this section we gather all the quantities related to astronomical instrumentation, e.g. detectors (plates, CCDs, etc.), spectrographs, telescopes (but also observatories or missions), etc.
4. **meta** (metadata)
   This section includes all the information that is not coming directly from a measure, and info 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 elsewere.
6. **phot** (photometry)
   All the words describing photometric measures are included in this section. Basically we 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). We also include "colors", which are differences of magnitudes (i.e. ratios of fluxes) measured in different e.m. bands. In the present proposal we tried to simplify the PHOT section of old UCD1, keeping only the most important (used, diffuse) colors.
7. **phys** (physics)
   Atomic and molecular data (mainly used for spectroscopy) and basic physical quantities (temperature, mass, gravity, luminosity, etc.)
8. **pos** (positional data)
   All quantities related to the position of an object, in general on the sky. Angular quantities, with the exception of projections from spherical to rectangular systems. Also 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 are placed here for the moment.
9. **spect** (spectral data)

For historical reasons, photometric data taken in narrow spectral bands with instruments called spectrographs are classified as spectroscopic data. Don't miss up with "**em**". Bi-dimensionally speaking, **em** represents the x axis, **phot** and **spect** the y axis.

10. **src** (source)

    This is a rather generic section, mainly devoted to source classifications. For no other than practical reasons, variability, orbital and velocity data are also included in this section.

11. **stat** (statistics)

    Statistical information on measurements.

12. **time** (time)

    Quantities related to time (age, date, period, etc.)

A   List of valid words

All words are preceded by a "syntax" code that can help in the process of building composed UCD1+. The code "P" means that the word can only be used as "primary" or first word, "S" stands for only secondary, code "Q" means that the word can be used indifferently as first or secondary word.

```
S 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
S   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 H band
S     em.IR.J  Infrared J band
S     em.IR.K  Infrared K band
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
S     em.X-ray.medium  Medium X-ray
S     em.X-ray.soft  Soft X-ray
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
S     em.gamma.soft  Soft gamma ray
S   em.line Designation of major atomic and molecular lines
S     em.line.21cm 21cm hydrogen line
S     em.line.Brgamma  Bracket gamma 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
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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 B band between 400 and 500 nm
S     em.opt.I  Optical I band between 750 and 1000 nm
S     em.opt.R  Optical R band between 600 and 750 nm
S     em.opt.U  Optical U band between 300 and 400 nm
S     em.opt.V  Optical V 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 GHz
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

S instr  Instrument
Q   instr.ang-res  Angular resolution
Q   instr.antenna-temp  Antenna temperature
Q   instr.area  Collecting area of detector
Q   instr.background  Instrumental background
Q   instr.bandpass  Bandpass of instrument
Q   instr.bandwidth  Bandwidth of the instrument
Q   instr.baseline  Baseline for interferometry
Q   instr.beam-width  Radio beam width
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
S   instr.filter  Filter
Q     instr.filter.transm  Filter transmission
Q   instr.fov  Field of view
S   instr.obsty  Observatory satellite mission
Q     instr.obsty.site  Observatory location
Q       instr.obsty.site.seeing Seeing
Q   instr.offset  Offset angle respect to main direction of observation
Q   instr.param  Various instrumental parameters
S   instr.pixel  Pixel
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.sky-level  Sky level
Q   instr.sky-temp  Sky temperature
S   instr.spect  Spectrograph
Q     instr.spect.dispersion  Dispersion of spectrograph
Q     instr.spect.order  Spectral order
Q     instr.spect.resolution  Spectral resolution
S   instr.tel  Telescope
Q     instr.tel.focus  Telescope focus
```

```
S 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.member  Membership code
P     meta.code.mime MIME type
P     meta.code.multip  Multiplicity or binarity flag
P     meta.code.qual  Quality code
P   meta.cryptic  Unknown or impossible to understand quantity
S   meta.dataset Dataset
Q   meta.file  File
S   meta.fits  FITS standard
Q     meta.fits.software  Software used in generating FITS file
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
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
Q     meta.ref.url URL, web address
Q   meta.table  Table or catalogue
Q     meta.table.axis  Table axis
P   meta.title Title or explanation
P   meta.ucd UCD
P   meta.unit  Unit

S obs  Observation
S   obs.air Atmosphere
Q     obs.air.extinction  Atmospheric extinction
Q     obs.air.mass  Airmass
Q   obs.field  Region covered by the observation
Q   obs.image  Image
Q   obs.observer  Observer, discoverer
Q   obs.param  Various observation or reduction parameter

S phot  Photometry
Q   phot.calib  Photometric calibration
Q   phot.color  Color index or magnitude difference
Q     phot.color.Cous  Color index in Cousins system
Q     phot.color.Gen  Color index in Geneva system
Q     phot.color.Gunn  Color index in Gunn system
Q     phot.color.JHN  Color index in Johnson 65+ system
Q     phot.color.STR Color index in Stroemgren system
Q       phot.color.STR.c1  c1 Stroemgren color
Q       phot.color.STR.b-y  b-y Stroemgren color
Q       phot.color.STR.m1  m1 Stroemgren
Q     phot.color.excess  color excess
Q     phot.color.reddFree  Dereddened color
Q   phot.count  Flux expressed in counts(/s)
Q   phot.fluence  fluence
Q   phot.flux  Photon flux
Q     phot.flux.bol  Bolometric flux
Q   phot.fluxDens  Flux density (per wl/freq/energy interval)
Q     phot.fluxDens.sb  Flux density surface brightness
Q   phot.limbDark  Limb-darkening coefficients
Q   phot.mag  Photometric magnitude
Q     phot.mag.bc  Bolometric correction
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```
Q     phot.mag.bol  Bolometric magnitude
Q     phot.mag.distMod  Distance modulus
Q     phot.mag.reddFree  Dereddened magnitude
Q     phot.mag.sb  Surface brightness magnitude
Q   phot.sb  Surface brightness

S phys Physical quantities
Q   phys.SFR  Star formation rate
Q   phys.absorption  Extinction or absorption
Q     phys.absorption.coeff  Absorption coefficient
Q     phys.absorption.gal  Galactic extinction
Q     phys.absorption.gf  Gaunt factors
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.angMomentum  Angular momentum
S   phys.at  Atomic physics
Q     phys.at.branchingRatio Branching ratio
Q     phys.at.collStrength Collisional strength
Q     phys.at.crossSection Atomic cross-section
Q     phys.at.einstein Einstein coefficient
Q     phys.at.lande Lande factor
S     phys.at.level  Atomic level
Q     phys.at.lineBroad Line broadening coefficient
Q     phys.at.lineShift Line shifting coefficient
Q     phys.at.moment Atomic momentum
Q       phys.at.moment.electric  Electric momentum
Q       phys.at.moment.magnetic  Magnetic momentum
Q     phys.at.number  Atomic number Z
Q     phys.at.oscStrength Oscillator strength
Q     phys.at.qn Atomic quantum number
Q       phys.at.qn.I Nuclear spin quantum number
Q       phys.at.qn.S Electronic spin quantum number
Q       phys.at.qn.L Electronic L quantum number
Q       phys.at.qn.J Coupling of S and L qn
Q       phys.at.qn.F Coupling of J and I qn
Q       phys.at.term Atomic term
Q       phys.at.wOscStrength      Weighted oscillator strength
S   phys.atmol  Atomic and molecular physics (shared properties)
S     phys.atmol.coll Related to collisions
Q     phys.atmol.configuration   Configuration
S     phys.atmol.element          Element
S     phys.atmol.ion Ion
S     phys.atmol.ionization  Related to ionization
Q     phys.atmol.parity Parity
S       phys.atmol.state.final   Quantity refers to final state
S       phys.atmol.state.initial Quantity refers to initial state
Q     phys.atmol.sweight  Statistical weight
S     phys.atmol.trans            Transition between states
Q   phys.columnDensity  Column density
Q   phys.density  Density (of mass, electron, energy...)
Q   phys.dielectric  Complex dielectric function
Q   phys.dispMeas  Dispersion measure
Q   phys.distance  Distance (not angular)
Q     phys.distance.compon  Component of distance vector
Q     phys.distance.gc  Galactocentric distance
Q   phys.electField  Electric field
S   phys.electron Electron
Q     phys.electron.degen  Electron degeneracy parameter
Q     phys.electron.energy  Electron energy
Q   phys.emissMeasure  Emission measure
Q   phys.emissivity  Emissivity
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```
Q    phys.energy  Energy
Q    phys.eos  Equation of state
Q    phys.excitParam  Excitation parameter U
Q    phys.extension  Angular extension, width, diameter
Q    phys.gravity  Surface gravity
Q    phys.ionizParam Ionization parameter
Q      phys.ionizParam.coll  Collisional ionization
Q      phys.ionizParam.rad  Radiative ionization
Q    phys.luminosity  Luminosity
Q      phys.luminosity.fun  Luminosity function
Q    phys.magAbs  Absolute magnitude
Q      phys.magAbs.bol  Bolometric absolute magnitude
Q    phys.magField  Magnetic field
Q    phys.mass  Mass
Q      phys.mass.fraction  Mass fraction
Q      phys.mass.light  Mass to light ratio
Q      phys.mass.loss  Mass loss
Q    phys.massYield  Mass yield
Q    phys.mol  Molecular data
Q      phys.mol.dipole  Molecular dipole
Q        phys.mol.dipole.magnetic Magnetic molecular dipole
Q        phys.mol.dipole.electric Electric molecular dipole
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.magnetic Magnetic molecular quadrupole
Q        phys.mol.quadrupole.electric Electric molecular quadrupole
S      phys.mol.rotation Molecular rotation
S      phys.mol.vibration Molecular vibration
Q    phys.polarization  Polarization
Q      phys.polarization.posAng  Polarization angle
Q      phys.polarization.rotMeas  Rotation measure polarization
Q      phys.polarization.stokes  Stokes polarization
Q    phys.pressure  Pressure
Q    phys.refraction  Refraction
Q    phys.size  Size (not angular)
Q      phys.size.area  Area
Q      phys.size.diameter  Diameter
Q      phys.size.radius  Radius
Q    phys.temperature  Temperature
Q      phys.temperature.effective Effective temperature
Q      phys.temperature.electron  Electron temperature

S pos  Position and coordinates
Q    pos.ang  Angular distance
Q      pos.ang.separation  Angular separation
Q    pos.az  Position in alt-azimutal frame
Q      pos.az.alt  Alt-azimutal altitude
Q      pos.az.ha  Alt-azimutal hour-angle
Q      pos.az.zd  Alt-azimutal zenith distance
S    pos.barycenter  Barycenter
Q    pos.det  Position on instrument detector
Q    pos.dirCos  Direction cosine
S    pos.earth Coordinates related to Earth
Q      pos.earth.lat  Latitude on Earth
Q      pos.earth.lon  Longitude on Earth
Q      pos.earth.nutation  Earth nutation
Q    pos.ec Ecliptic coordinates
Q      pos.ec.lat  Ecliptic latitude
Q      pos.ec.lon  Ecliptic longitude
Q    pos.ee  Position ellipse error
Q    pos.ephem  Ephemeris
Q    pos.eq  Equatorial coordinates
Q      pos.eq.dec  Declination in equatorial coordinates
Q        pos.eq.dec.arcsec  Arcsec of declination
Q      pos.eq.ra  Right ascension in equatorial coordinates
Q        pos.eq.ra.minutes  Minutes of right ascension
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```
Q     pos.eq.ra.seconds  Seconds of right ascension
Q   pos.frame Reference frame used for positions
Q   pos.gal  Galactic coordinates
Q     pos.gal.compon  Cartesian component of galactic coordinates
Q     pos.gal.lat  Latitude in galactic coordinates
Q     pos.gal.lon  Longitude in galactic coordinates
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.pm  Proper motion
Q     pos.pm.dec  Proper motion in declination
Q     pos.pm.ra  Proper motion in right ascension
Q   pos.posAng  Position angle
Q   pos.precess  Precession
Q     pos.precess.dec  Precession in declination
Q     pos.precess.ra  Precession in right ascension
Q   pos.proj  Projected coordinates
Q   pos.sg Supergalactic coordinates
Q     pos.sg.compon  Cartesian component of supergalactic coordinates
Q     pos.sg.lat  Latitude in supergalactic coordinates
Q     pos.sg.lon  Longitude in supergalactic coordinates
S   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


S spect Spectroscopy
Q   spect.doppler  Doppler parameter b
Q   spect.index  Spectral index
S   spect.line  Spectral line
Q     spect.line.asymmetry  Line asymmetry
Q     spect.line.broad  Spectral line broadening
Q       spect.line.broad.Zeeman  Zeeman broadening
Q     spect.line.eqwidth  Line equivalent width
Q     spect.line.intensity  Line intensity
Q     spect.line.profile  Line profile
Q     spect.line.veloc  Spectral line radial velocity
Q     spect.line.width  Spectral line fwhm


S src  Source
Q   src.class  Source classification (star, galaxy, cluster...)
Q     src.class.color  Color classification
Q     src.class.distance  Abell distance class
Q     src.class.luminosity  Luminosity class
Q     src.class.richness  Richness Abell class
Q     src.class.star-galaxy  Star/galaxy discriminator
Q     src.class.struct  Bautz-Morgan structure classification
Q   src.density  Density of sources
Q   src.ellipticity  Source ellipticity
Q   src.fwhm  Source FWHM angular size
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.energy  Orbital energy
Q     src.orbital.inclination  Orbit inclination
```

```
Q     src.orbital.meanAnomaly  Orbit mean anomaly
Q     src.orbital.node  Ascending node
Q     src.orbital.periastron  Periastron
Q     src.orbital.separation  Separation between orbital components
Q     src.orbital.size  Size of orbit major axis
Q     src.orbital.veloc  Orbital velocity
Q   src.redshift  Redshift
Q   src.sample  Sample
Q   src.separation  Separation between sources
Q   src.spType  Spectral type MK
Q   src.var  Variability of source
Q     src.var.amplitude  Amplitude of variation
Q     src.var.index  Variability index
Q     src.var.pulse  Pulse
Q   src.veloc  Radial velocity
Q     src.veloc.ang  Angular velocity
Q     src.veloc.cmb  CMB velocity
Q     src.veloc.compon  Component velocity
Q     src.veloc.dispersion  Velocity dispersion
Q     src.veloc.escape   Escape velocity
Q     src.veloc.expansion  Expansion velocity
Q     src.veloc.gc  Galactocentric radial velocity
Q     src.veloc.geoc  Geocentric radial velocity
Q     src.veloc.hc  Heliocentric radial velocity
Q     src.veloc.lg  Local Group radial velocity
Q     src.veloc.lsr  Local Standard of Rest radial velocity
Q     src.veloc.microTurb  Microturbulence velocity
Q     src.veloc.pulsat  Pulsational velocity
Q     src.veloc.rotat  Rotational velocity

S stat Statistical parameters
Q   stat.Fourier  Fourier coefficient
Q     stat.Fourier.amplitude  Amplitude Fourier coefficient
P   stat.covariance Covariance between two parameters
P   stat.error  Statistical error
P     stat.error.sys Systematic error
Q   stat.fit  Fit
Q     stat.fit.chi2  Chi2
Q     stat.fit.dof  Degrees of freedom
Q     stat.fit.goodness  Goodness or significance of fit
Q     stat.fit.omc  Observed minus computed
Q     stat.fit.param  Parameter of fit
Q     stat.fit.residual  Residual fit
Q   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.expo  Exposure time
Q     time.expo.end  end exposure
Q     time.expo.start  start exposure
Q   time.interval  Interval
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

- Descriptions of the words were improved.
- 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.
- **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**.
- The **phot.color** section was significantly simplified.
- Missing nodes of the tree were added (e.g. **em.gamma**, **em.mm**, **pos.sg**).
- Creation of new words: **em.wavenumber**, **meta.ucd**, **stat.error.sys**
- Typos were corrected in **em.opt.*** units and a few other descriptions.