

Realization of UCD1+

Andrea Preite Martinez

Sébastien Derriere

CDS

From UCD1 to UCD1+

- **Summary**
 - Procedure
 - Results
 - Structure of the tree
 - Open problems

Doc.:

WD-UCD-20040426

WD-UCDlist-20040520

WD-EMSpectrum-20040520

From UCD1 to UCD1+ (1/4)

- Select **UCD1**
- Get summary info (UCD1 browser)
- Consistency test (titles/c.names/units)
 - Y: define (1) **UCD1+**
 - N:
- Get detailed descriptions (tab/col/paper)
 - define (n) **UCD1+**

ex:

%1 POS_EQ_DEC_MAIN %2 pos.eq.dec;meta.main

%1 POS_EQ_RA_MAIN %2 pos.eq.ra;meta.main

%1 POS_EQ_PMDEC %2 pos.pm.dec

%1 POS_EQ_PMRA %2 pos.pm.ra

%1 PHOT_FLUX_DENSITY %2 phot.fluxDens;em.radio.750-1500MHz

%1 PHOT_FLUX_DENSITY %2 phot.fluxDens;em.IR.4-8um

%1 PHOT_FLUX_DENSITY %2 phot.fluxDens;em.IR.8-15um

(11 columns in 10 tables)

%1 POS_EQ_RA_CORR %2 time.expo

%1 POS_EQ_RA_CORR %2 pos.eq.ra;arith.diff

(13 columns in 11 tables)

%1 PHOT_FLUX_X	%2 phot.flux;em.opt
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.radio.750-1500MHz
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.IR.4-8um
%1 PHOT_FLUX_X	%2 phot.flux;em.UV
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.UV
%1 PHOT_FLUX_X	%2 phot.flux;arith.ratio
%1 PHOT_FLUX_X	%2 phot.flux;em.X-ray
%1 PHOT_FLUX_X	%2 phot.flux;em.X-ray.soft
%1 PHOT_FLUX_X	%2 phot.flux;em.X-ray.med
%1 PHOT_FLUX_X	%2 phot.flux;em.gamma.hard
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.X-ray.soft
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.X-ray.soft;stat.max
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.X-ray.med
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.gamma.hard
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.X-ray.med;stat.max
%1 PHOT_FLUX_X	%2 phot.fluxDens;em.X-ray

(328 columns in 140 tables)

From UCD1 to UCD1+ (4/4)

- Results:
 - UCD1-UCD1+ table (1 to n), with $n \geq 1$ in 160 cases
 - Lists of UCD1+:
 - atoms
 - error, mag, phot, stat
 - words
 - phot.mag stat.error
 - composed words
 - stat.error;phot.mag

The UCD1+ tree

•	arith	6	arithmetics
•	em	51	electromagnetic spectrum
•	instr	38	instrument
•	meta	33	metadata
•	obs	7	observation
•	phot	46	photometry
•	phys	95	physics (under revision)
•	pos	52	positional data
•	spect	14	spectral data
•	src	49	source
•	stat	23	statistics
•	time	14	time

- **arith**

- concepts involving or indicating some math operation performed on the primary concept: diff, ratio, gradient, rate

- **em**

- description of the e.m. spectrum in bands: radio, mm, ir, opt, UV, x-ray, gamma
- proposal: lines by name (Halpha, Br-alpha,..)

- **instr**

- quantities related to instrumentation: detector (plate, CCD), spectrograph, telescope, mission

- **meta**
 - all information not coming directly from a measurement (bib, code, id, main, record, ref, unit, ...)
- **obs**
 - quantities describing an observation: observer, observing conditions, ..
- **phot**
 - photometric measurements: flux density, flux, magnitude, color(=mag diff, or flux ratio)

- **phys**

- at + mol data (under revision)
- basic phys. quantities (mass, temperature, dimension, luminosity, ..)

- **pos**

- quantities related to the position of an object (coordinates, proper motion, precession, parallaxes)

- **spect**

- spectrophotometric data (kept for historical reasons)

- **src**
 - source classification, + variability, velocity and orbital data
- **stat**
 - statistical information on measurement (error, stdev, snr, mean, max, min,..), data fitting, ..
- **time**
 - time, date, age data

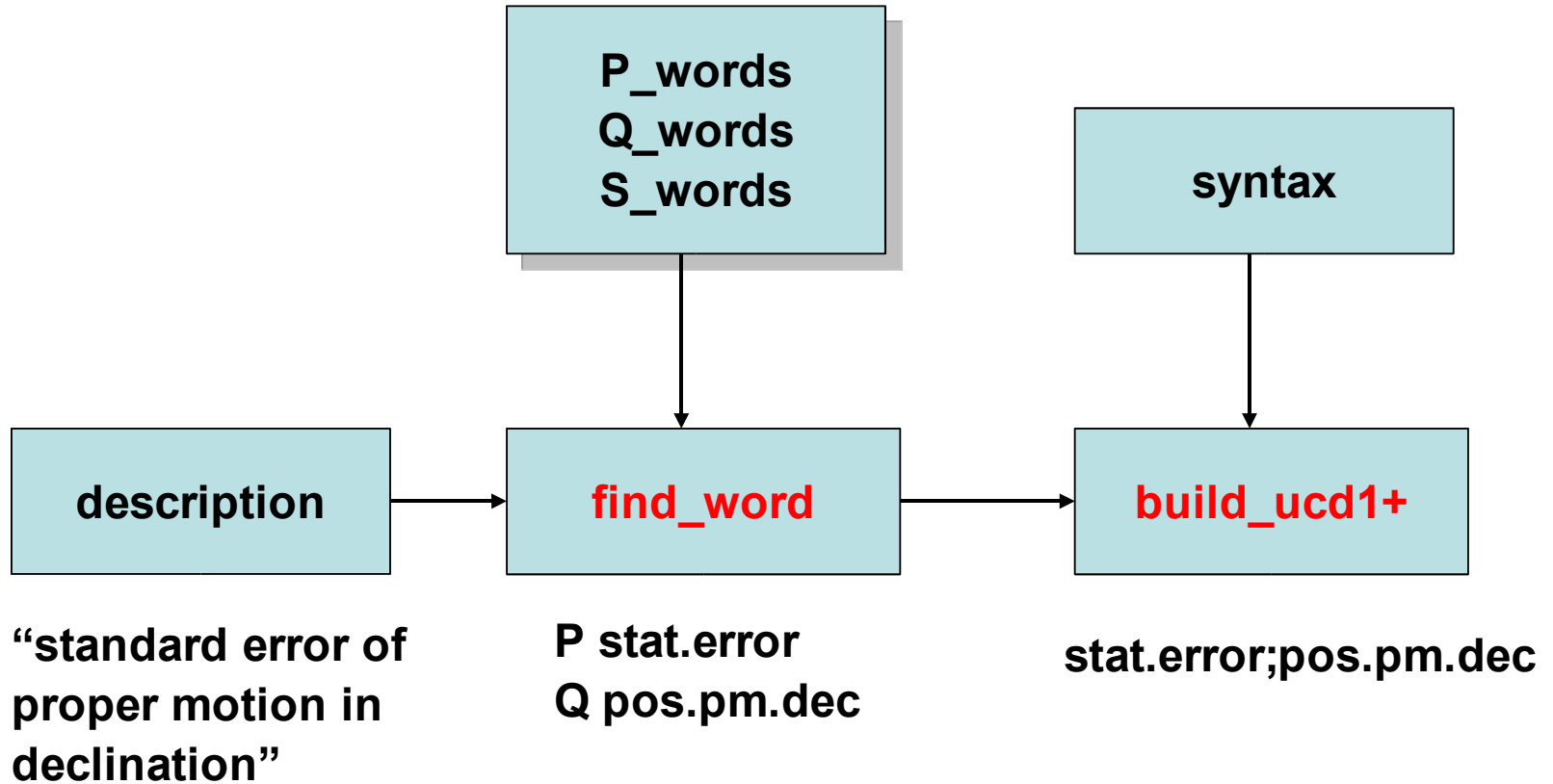
statistics ...

- UCD1: 1459 leaves (>1700 entries)
- UCD1+:
 - atoms: 356, including em_bands
 - words: 428 (not all of them are ucd1+)
 - UCD1+: 601
 - composed with >1 word: 267

... syntax ...

- which word is carrying the basic meaning?
 - words in first position: 347
 - words in secondary positions: 121
- “syntax“ flag:
 - **P** words (always primary) : 46
 - **S** words (always secondary) : 10+em_bands
 - **Q** words : all the rest

... and tools



> **fwpqs** main declination

Q pos.eq.dec

S meta.main

> **fwpqs** main declination | **b-ucd**

ucd1+ : pos.eq.dec;meta.main

> **fwpqs** offset in declination | **b-ucd**

ucd1+ : pos.eq.dec;arith.diff

> **fwpqs** optical V magnitude

Q phot.mag

S em.opt

S em.opt.V

> **fwpqs** optical V magnitude | **b-ucd**

ucd1+ : phot.mag;em.opt.V

> **fwpqs** normalized Halpha line intensity | **b-ucd**

ucd1+ : spect.line.intensity;em.line.Halpha;arith.ratio

> **fwpqs** peak flux density at 21cm | **b-ucd**

ucd1+ : phot.fluxDens;em.radio.750-1500MHz;stat.max

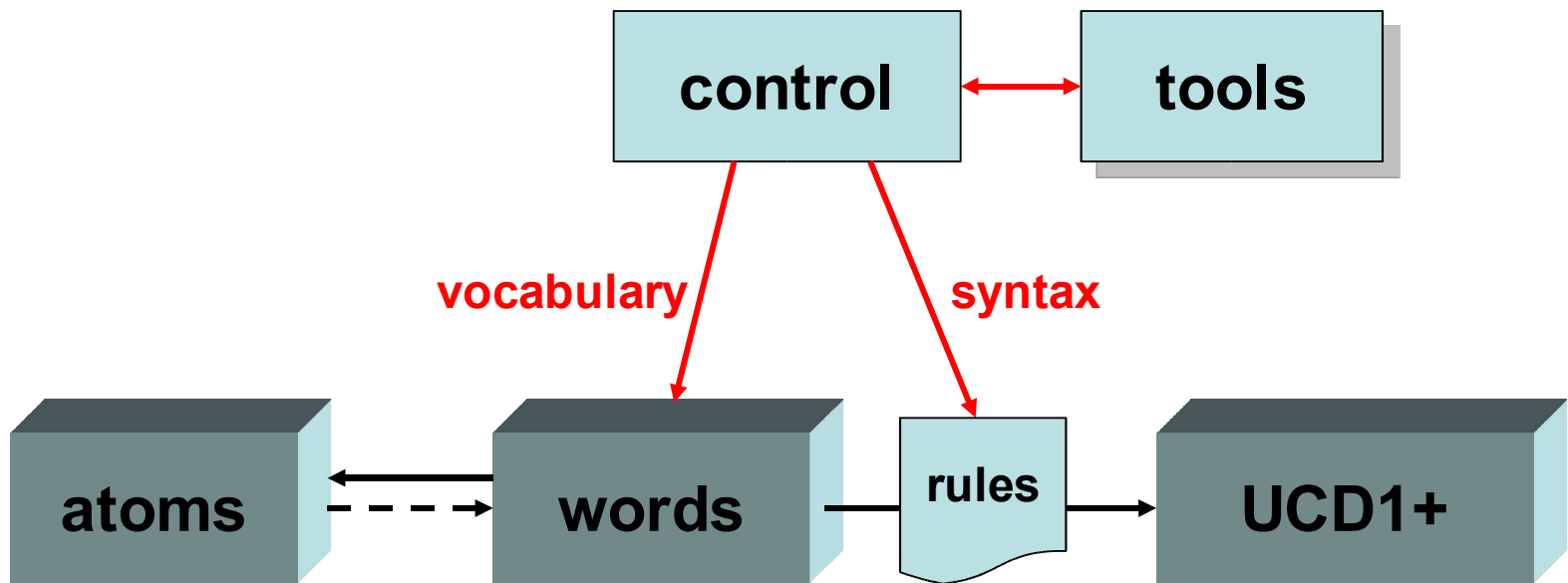
> **fwpqs** error in flux density at 21cm | **b-ucd**

ucd1+ : stat.error;phot.fluxDens;em.radio.750-1500MHz

> **fwpqs** time
Q time
Q time.age
Q time.crossing
Q time.epoch
Q time.expo
Q time.interval
Q time.phase
Q time.relax
Q time.resolution
Q time.scale
> **fwpqs** time | **b-ucd**
ucd1+ : time
> **fwpqs** time of observation
Q time.epoch
> **fwpqs** observing time
Q time.expo

> **fwpqs** photon counts at 6.5kev | **b-ucd**
ucd1+ : phot.count;em.X-ray.medium

Open problems: 1. control



2. incomplete

- em.x-ray.soft, em.x-ray.medium
 - (hard?)
- em.gamma.hard
 - (soft?)
- ERROR (3606 col.s, 262 units)
 - => stat.error (;.....)
- meta.fits
- pos.ee (error ellipse)



complete with
WD-EM Spectrum



FITS -> UCD1+

3. too generic

- obs.param
- stat.param
- stat.fit.param
- stat.value

- stat.error, stat.stdev

- phot.color
- phot.color.opt-ir (*ad hoc* patch!)
 - hardness/softness ratio => phot.flux;arith.ratio ??

4. hierarchy (?)

- phot.color.V-I.cous

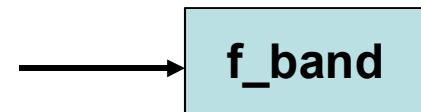
but:

- phot.color.U-B
- phot.color.U-B.JHN
- phot.color.U-B.gen

5. choices

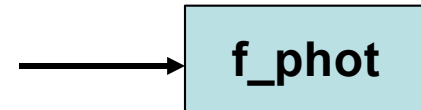
- em

- **bands** (WD-EM Spectrum)



- continuum (like sky coo)

- specific instr. bands



- em

- **em.opt.B.Hbeta**

- em.line.Hbeta (better because of redshift)

6. ... cryptic data

- **meta.cryptic**

- PHOT_BRIGHTNESS-SLOPE : Spatial brightness distribution slope

Col: Slope parameter in b-band

Note: The slope parameter is defined as the slope of the logarithmic brightness residuals of each image against a polynomial representing the standard stellar profile.

- FIT_RATIO : Ratio of Measurement to Theoretical Value

Col: Ratio of $I \cdot \lambda$ to $g \cdot A$

Note: Ratio of $I \cdot \lambda$ to $g \cdot A$, where I is the line intensity, λ is the line wavelength, g is the statistical weight of upper level and A is the transition probability.

$I \lambda / g A$ should be the same for each set of lines with a common upper level.