

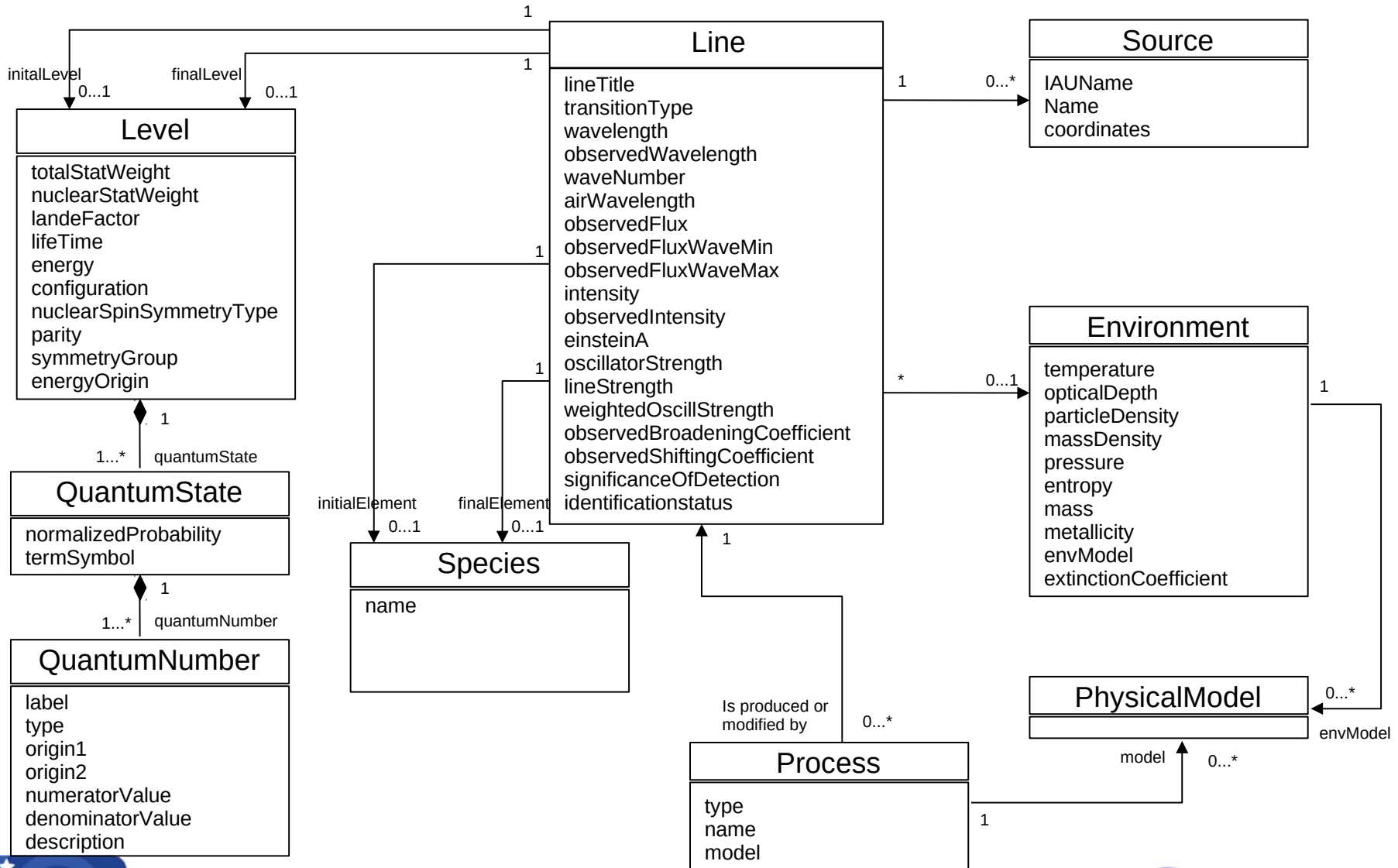
Simple Spectral Lines Data Model

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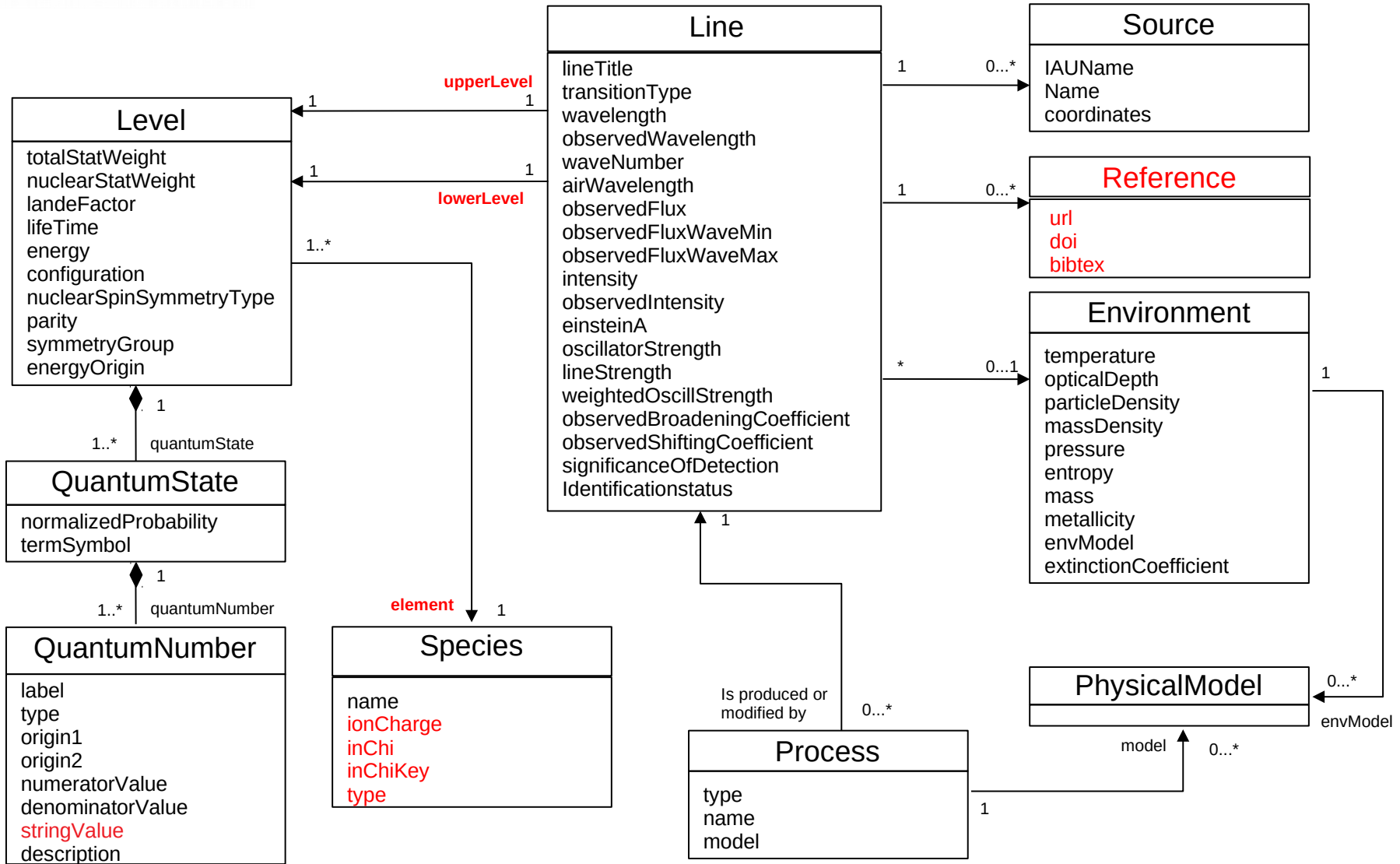
- Aiming at a convergence between VAMDC and IVOA standards for spectral lines search
- VAMDC uses a custom TAP version : [VAMDC-TAP](#)
- VAMDC provides a python middleware to make databases compatible with VAMDC-TAP
- SLAP will be available for existing VAMDC nodes through a middleware update
- SSLDM needs to be completed in conjunction with SLAP

- Bibliographic references were not defined
- Lines have initial/final levels, not compatible with upper/lower levels in VAMDC (and used in most atomic and molecular databases)
- Species definition is very limited

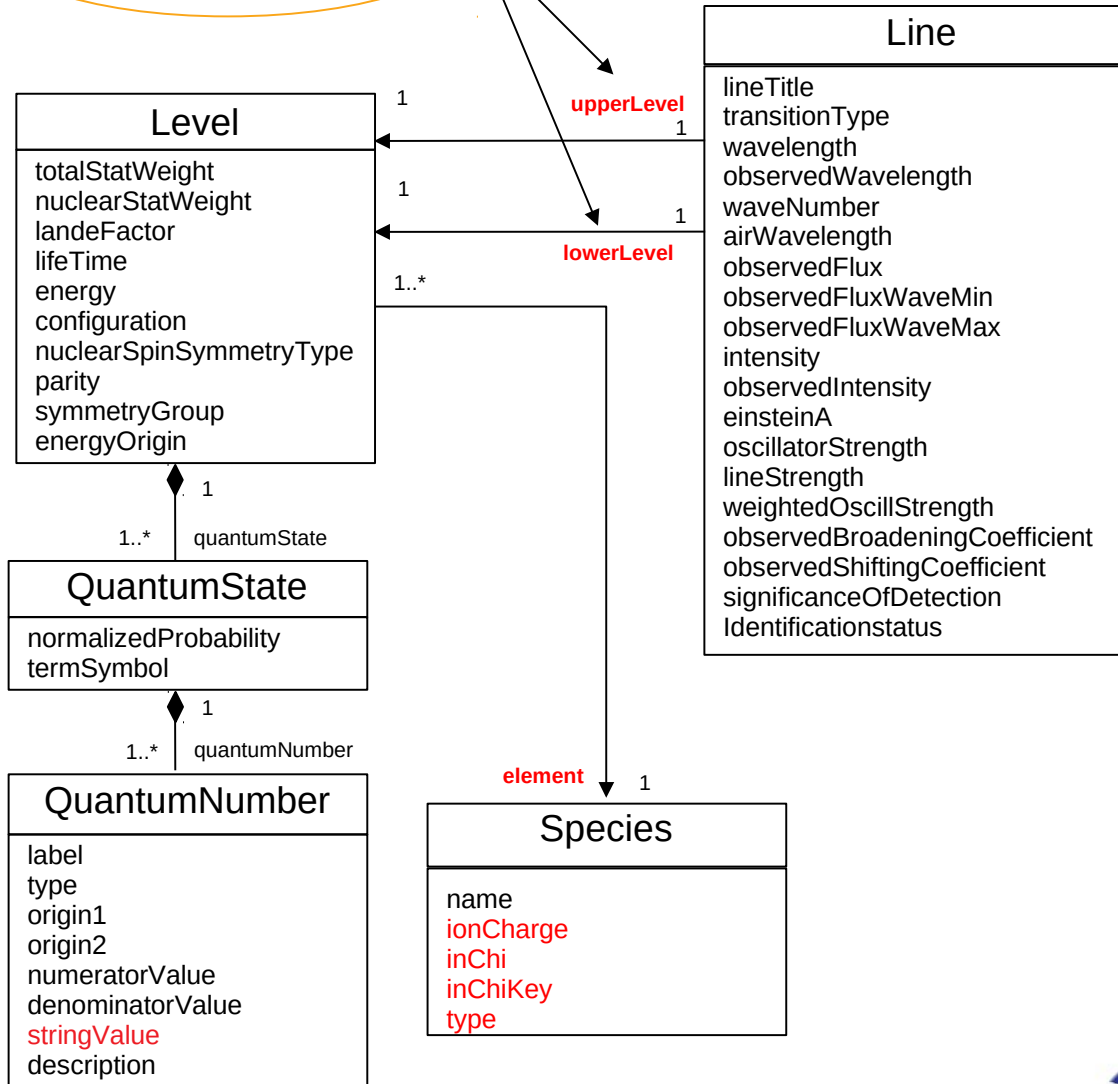
Current data model

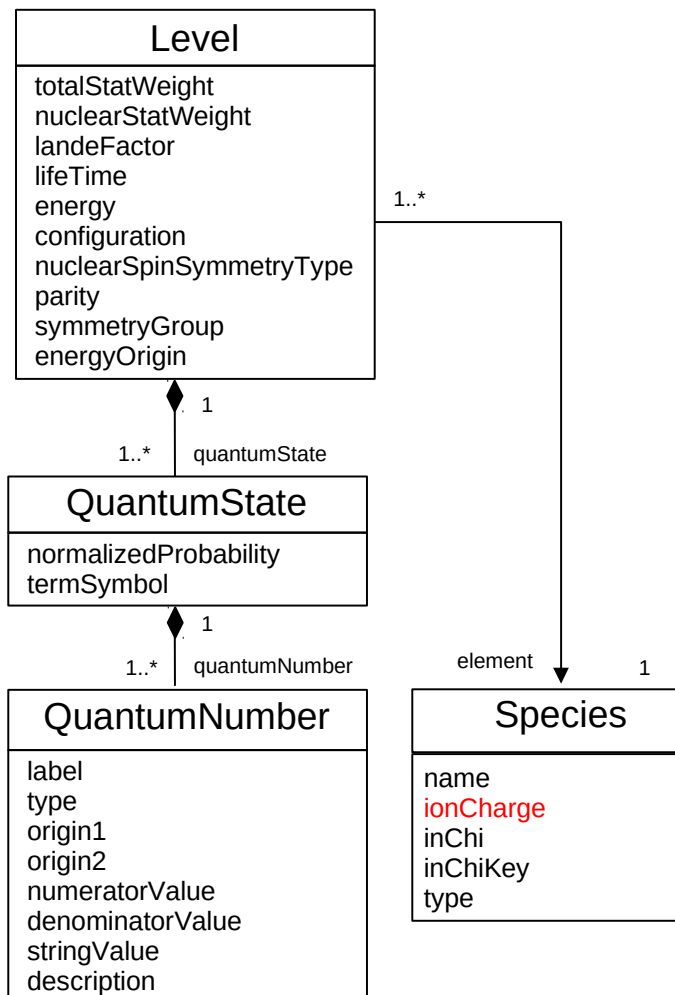


Proposed data model

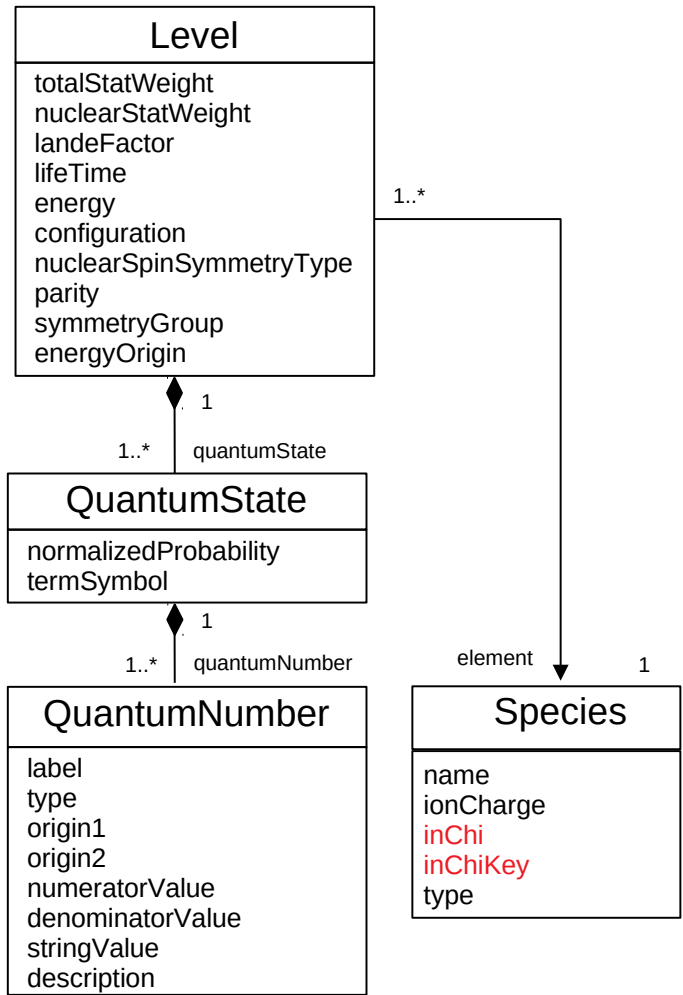


A line has upper and lower levels





New Species attribute
ionCharge (int)

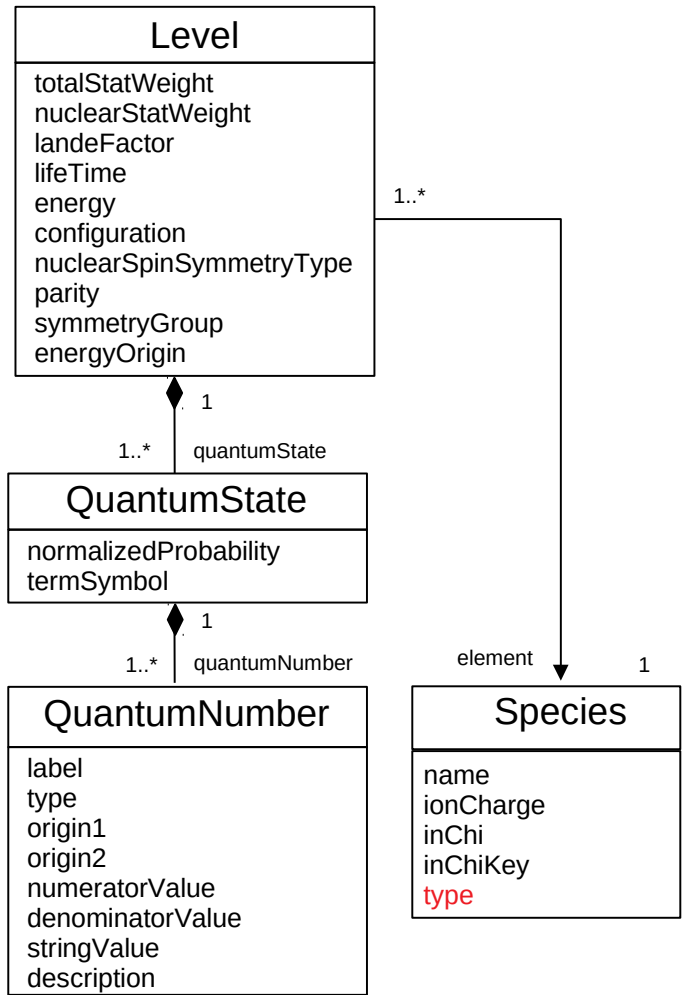


New Species attributes

InChi (ex : 1S/CO/c1-2/i1+1)
 InChiKey (ex: UGFAIRIUMAVXCW-OUBTZVSYSA-N)

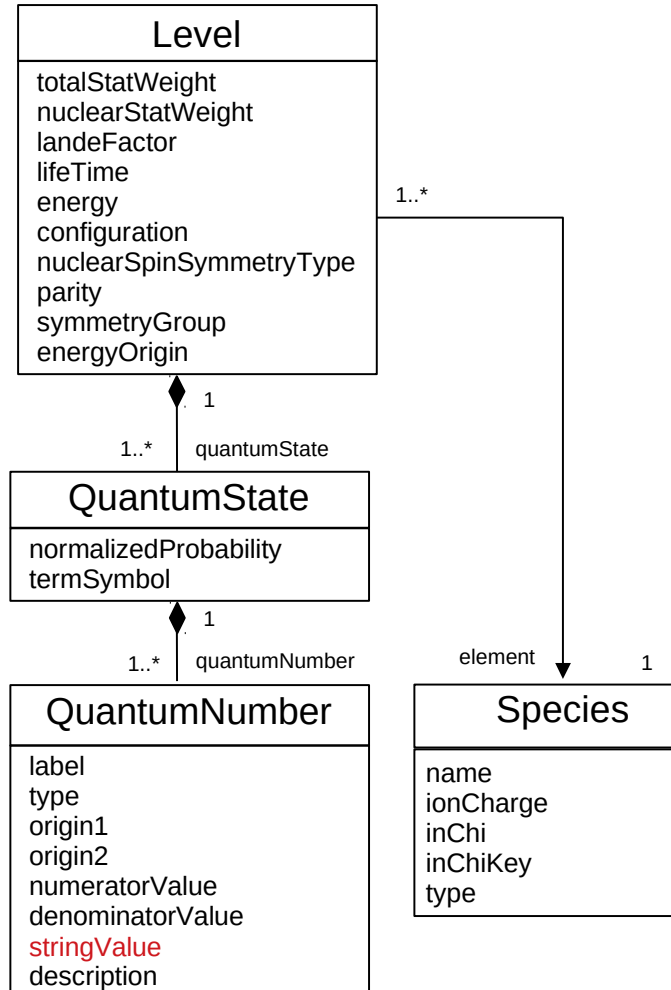
- InChI is a standardized way to represent atomic and molecular species according to their structure
- To be used in software applications
- Developed by the International Union of Pure and Applied Chemistry (IUPAC), now under InChI Trust responsibility (non profit organization)
- InChIKey is a 27 characters hash of InChI, convenient for searching
- VAMDC provides [a species database](#) to simplify search of species

Proposed data model



New Species attributes
 type : Atom / Molecule

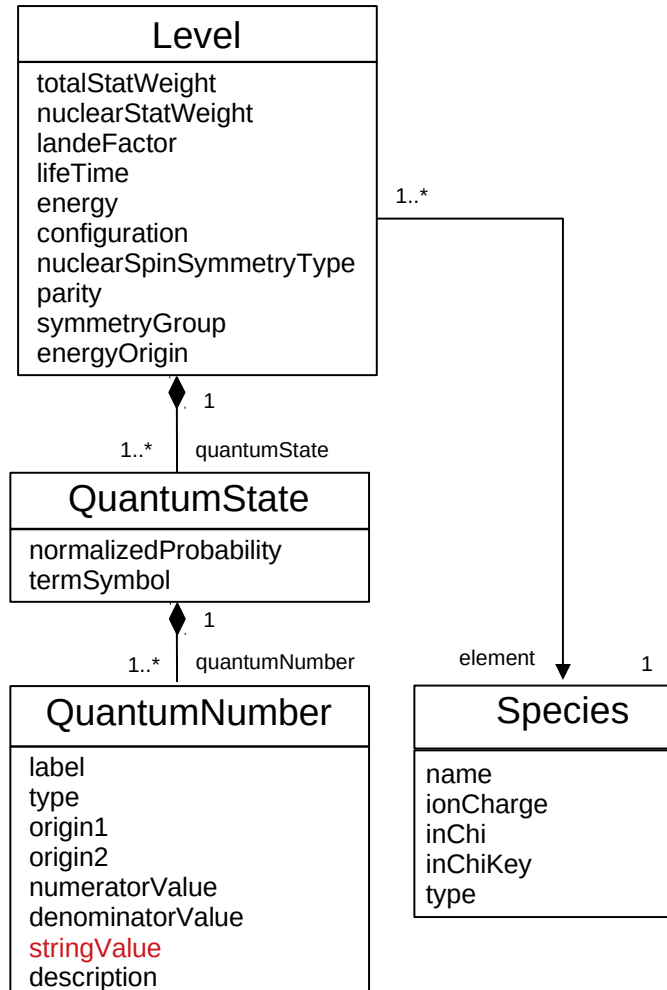
Proposed data model



New QuantumNumber attribute

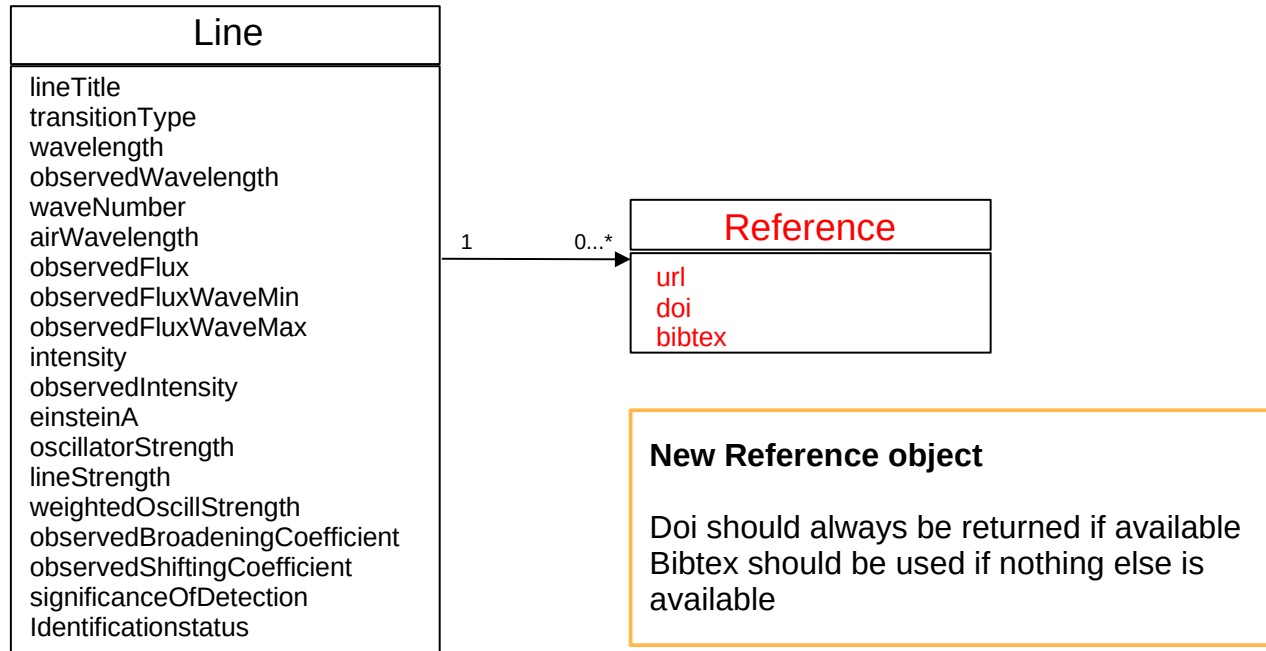
stringValue
 for molecular states :
 Electronic state label (X, A, a, b ...)
 kronigParity (e or f)
 vibrational wavefunction parity (g or v)
 ...

Proposed data model



Complete list of molecular quantum numbers available in VAMDC [case by case documentation](#)

Proposed data model



- VODML version of the DM is available on volute svn repository
 - <https://volute.g-vo.org/svn/trunk/projects/dm/ssldm/>

- Evolution of SLAP protocol
- Defines two endpoints :
 - lines : returns a list of spectral lines according to given parameters
 - species : returns the list of species available in the service
- lines endpoint mandatory parameters :
 - WAVELENGTH : wavelength interval in meters
 - MAXREC
 - RESPONSEFORMAT
- species endpoint mandatory parameter :
 - RESPONSEFORMAT
- FORMAT=METADATA has been replaced by getCapabilities

- SLAP 2 implementations :
 - <http://sesam.obspm.fr/19.04/vamdc/slap/capabilities>
 - <http://topbase.obspm.fr/19.04/vamdc/slap/capabilities>
- Examples :
 - Species endpoint
 - <http://sesam.obspm.fr/19.04/vamdc/slap/species>
 - Lines endpoint
 - <http://sesam.obspm.fr/19.04/vamdc/slap/lines?WAVELENGTH=9e-8+9.1e-8&MAXREC=10>