SLAP 1.1

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1. New Data Model
2. Search parameters
3. Output fields
4. QuerySpecies operation

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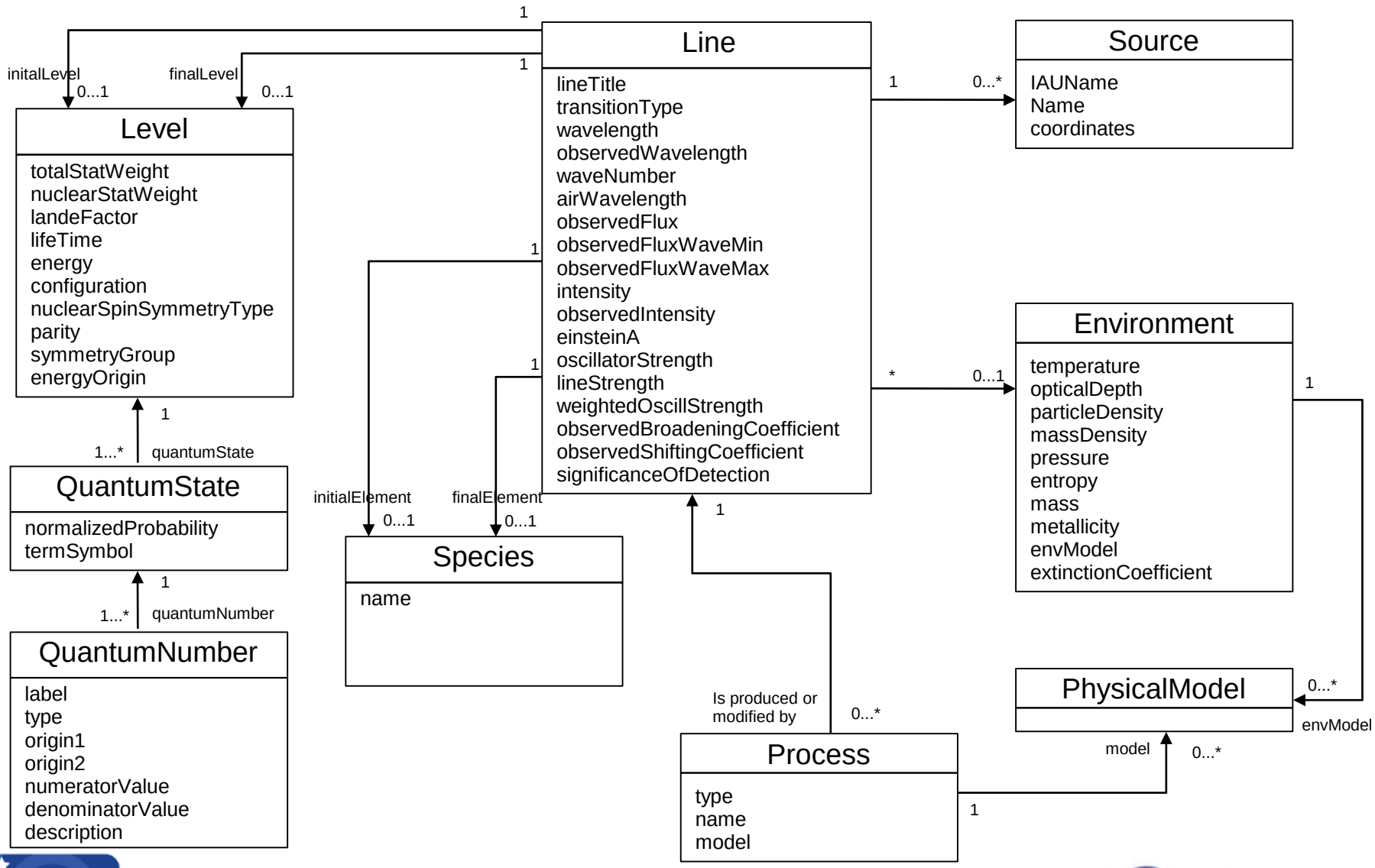
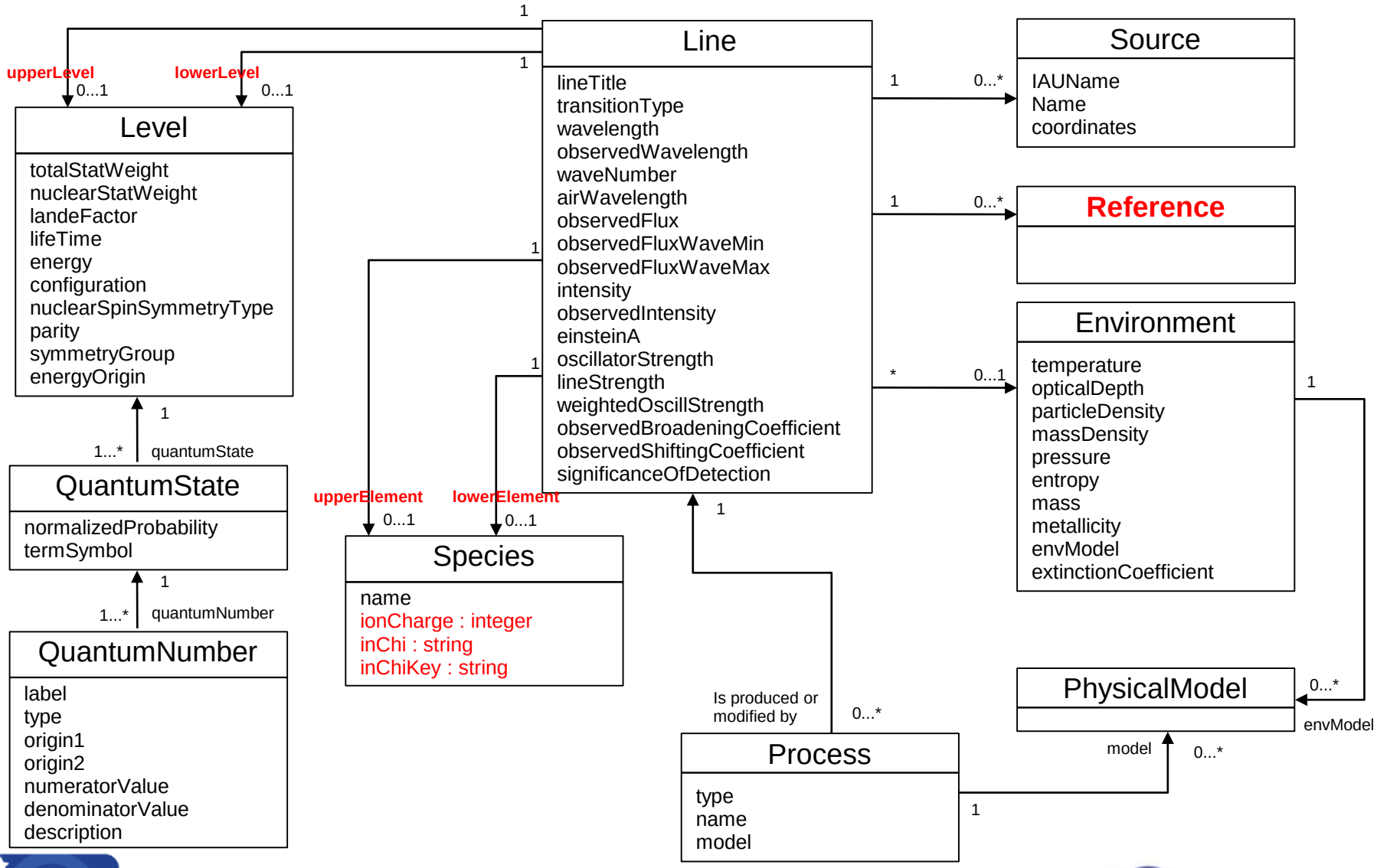
Current data model



New data model



Changes in the DM

- A Line has an upper and a lower level
- A line has an upper and a lower element
- All atomic and molecular databases uses this notation rather than initial/final
- Species has 3 new attributes :
  - IonCharge
  - InChi : species description in InChi standard notation
  - InChiKey : hash of InChi
- A Reference is either an URL or a bibtex description

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Input parameters

- Add ION_CHARGE query parameter
- Charge interval
- Examples of requests with new parameter :
  - Neutral CO :
    http://someservice/slap.jsp?REQUEST=queryData&**CHEMICAL_ELEMENT=CO&ION_CHARGE=0**
  - CO+ :
    http://someservice/slap.jsp?REQUEST=queryData&**CHEMICAL_ELEMENT=CO&ION_CHARGE=1**
  - Neutral CO and CO+ :
    http://someservice/slap.jsp?REQUEST=queryData&**CHEMICAL_ELEMENT=CO&ION_CHARGE=0/1**

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RESOURCE element

- The RESOURCE element **SHOULD** contain an INFO with name="REQUEST_COMPLETED_TIMESTAMP". Its value attribute contains the UNIX timestamp in seconds when the file was created by the service.
- The RESOURCE element **SHOULD** contain an INFO with name="SERVICE_VERSION".
  - Its value attribute contains the version of the service
  - The format of this value is managed by the data provider.
  - It must be updated each time the database content evolves.
- The RESOURCE element **SHOULD** contain an INFO with name="SERVICE_NAME". Its value attribute contains the name of the service that was queried.The format of this value is managed by the data provider.
- The RESOURCE element **SHOULD** contain an INFO with name="REQUEST_DESCRIPTION". Its value attribute contains a text description of the request that has been performed to obtain the data.

New optional fields in TABLE element

- New optional fields corresponds to the new attributes of the Species class in the data model

- New optional fields have utypes :
  - ssldm:Line.lowerElement.inChiKey
  - ssldm:Line.upperElement.inChiKey
  - ssldm:LinelowerElement.inChi
  - ssldm:Line.upperElement.inChi
  - ssldm:Line.lowerElement.ionCharge
  - ssldm:Line.upperElement.ionCharge

Renamed optional fields in TABLE element

- All fields that used initial/final level of initial/final element now uses upper/lower notation instead
- They correspond to the renamed relations in the DM
- List for lowerElement and lowerLevel :
  - ssldm:Line.lowerElement.name
  - ssldm:Line.lowerLevel.name
  - ssldm:Line.lowerLevel.energy.value
  - ssldm:Line.lowerLevel.configuration
  - ssldm:Line.lowerLevel.quantumState
  - ssldm:Line.lowerLevel.quantumState.quantumNumber.label
  - ssldm:Line.lowerLevel.quantumState.quantumNumber.numeratorValue

References of a Line in TABLE element

- If a link to the reference is available :
  - ucd="meta.bib;meta.ref.url"
- If there is no link available :
  - ucd="meta.bib" and available informations related to this line are written in bibtex

Values of IDENTIFICATION_STATUS corrected

- Possible values of **ssldm:Line.identificationStatus** in the document where not the same in :
  - chapter 6.1 : unidentified, identified and uncorrected
  - the appendix : UNIDENTIFIED, IDENTIFICATION_UNCERTAIN, IDENTIFICATION_PROVISIONAL, IDENTIFIED

- Values of appendix are the correct ones and are now used in chapter 6.1

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- Client applications needs to know what species are available to :
  - Suggest species existing in a service to the user
  - Suggest services for a given species
- VAMDC has a specific request "select species"
- Adding a new QuerySpecies operation in addition to QueryData
- It supports the FORMAT=METADATA parameter

```
<?xml version="1.0" encoding="UTF-8"?>
<VOTABLE xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://www.ivoa.net/xml/VOTable/v1.3" version="1.3">
  <RESOURCE type="results">
    <INFO name="QUERY_STATUS" value="OK"/>
    <INFO name="REQUEST_COMPLETED_TIMESTAMP" value="1487063789" />
    <INFO name="SERVICE_VERSION" value="2017_01_25"/>
    <INFO name="SERVICE_NAME" value="Queried line service name"/>
    <TABLE>
      <FIELD name="SPECIES_NAME" datatype="char" arraysize="*" ucd="phys.atmol.element" utype="ssldm:Species.name" />
     <FIELD name="ION_CHARGE" datatype="int" ucd="phys.atmol.ionization" utype="ssldm:Species.ionCharge" />
     <FIELD name="INCHIKEY" datatype="int" utype="ssldm:Species.inChiKey " />
      <DATA>
        <TABLEDATA>
          <TR>
            <TD>Fe</TD>
            <TD>0</TD>
            <TD>XEEYBQQBJWHFJM-UHFFFAOYSA-N</TD>
            <TD>InChI=1S/Fe</TD>
          </TR>
          <TR>
            <TD>Fe</TD>
            <TD>1</TD>
            <TD>WZGNVVUXVXNNOX-UHFFFAOYNA-N</TD>
            <TD>InChI=1/Fe/q+1</TD>
          </TR>
        </TABLEDATA>
      </DATA>
    </TABLE>
  <RESOURCE>
</VOTABLE>
```