

Mapping Spectrum Data Model v1.1 to v2.0

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1. Conversion between Spectrum Data Model v1.1 and v2.0 UTypes

In Spectrum DM v1.1, all UTypes began with “Spectrum.” In v2.0, the “Spectrum” prefix was dropped from all UTypes. For example:

```
utype='spec:Spectrum.Char.FluxAxis.unit'      -> utype='spec:Char.Flux.Axis.unit'  
utype='spec:'Spectrum.Data.SpectralAxis.Value' -> utype='spec:Data.SpectralAxis.Value'
```

Some of the UType elements have changes beyond dropping the prefix “Spectrum” from the name. These changes are listed in Table 1.

Table 1: UType name changes

v1.1	v2.0
Spectrum.Char.FluxAxis.Calibration	Char.FluxAxis.CalibrationStatus
Spectrum.Char.SpatialAxis.Calibration	Char.SpatialAxis.CalibrationStatus
Spectrum.Char.SpatialAxis.Resolution	Char.SpatialAxis.Resolution.refVal
Spectrum.Char.SpectralAxis.Calibration	Char.SpectralAxis.CalibrationSatus
Spectrum.Char.SpectralAxis.Resolution	Char.SpectralAxis.Resolution.refVal
Spectrum.Char.SpectralAxis.ResPower	Char.SpectralAxis.Resolution.ResolPower.refVal
Spectrum.Char.TimeAxis.Calibration	Char.TimeAxis.CalibrationStatus
Spectrum.Char.TimeAxis.Resolution	Char.TimeAxis.Resolution.refVal
Spectrum.Data.FluxAxis.Quality	Data.FluxAxis.Accuracy.QualityStatus
Spectrum.Data.FluxAxis.Quality.n	[REMOVED]
Spectrum.Data.SpectralAxis.Resolution	Data.SpectralAxis.Resolution.refVal
Spectrum.Type	Dataset.Type
Spectrum.DataModel	Dataset.DataModel.Name
Spectrum.Length	Dataset.Length
Spectrum.TimeSI	Dataset.TimeSI
Spectrum.SpectralSI	Dataset.SpectralSI
Spectrum.FluxSI	Dataset.FluxSI
Spectrum.DataID.Instrument	ObsConfig.Instrument
Spectrum.DataID.Bandpass	ObsConfig.Bandpass
Spectrum.DataID.DataSource	ObsConfig.DataSource

Also be sure to change all Spectrum Data Model versions to 2.0.
 The Dataset.DataModel.Name (previously Spectrum.DataModel) should be set to "Spectrum-2.0."

2. Spectrum DM UType Requirement Level Changes

The requirement levels of a few UTypes have changed since v1.1. These requirement levels are listed below in Table 2.

Table 2. Spectrum DM Requirement Levels

Field	v1.1	v2.0
Target.Name	OPT	MAN
Char.TimeAxis.Coverage.Bounds.Start	OPT	MAN
Char.TimeAxis.Coverage.Bounds.Stop	OPT	MAN

NOTE: for the TimeAxis.Coverage.Bounds, it is mandatory to supply EITHER the extent OR the start/stop pair.

3. New UTypes in v2.0

Other UTypes were added between v1.1 and v2.0, most related to describing coordinate systems (CoordSys), time-domain accuracy (Data.TimeAxis.Accuracy), background model statistics (Data.BackgroundModel.Accuracy), and quality flags (Data.*Axis.QualityDefs). These new UTypes and field details are listed in Table 3.

Table 3: New UTypes in v2.0

Char.FluxAxis.CoordSys.*
Char.FluxAxis.QualityDefs.QualityCode.CodeNum
Char.FluxAxis.QualityDefs.QualityCode.Definition
Char.SpatialAxis.CoordSys.*
Char.SpatialAxis.QualityDefs.QualityCode.CodeNum
Char.SpatialAxis.QualityDefs.QualityCode.Definition
Char.FluxAxis.CoordSys.*
Char.SpectralAxis.CoordSys.*
Char.SpectralAxis.QualityDefs.QualityCode.CodeNum
Char.SpectralAxis.QualityDefs.QualityCode.Definition
Char.TimeAxis.CoordSys.*
Char.TimeAxis.QualityDefs.QualityCode.CodeNum
Char.TimeAxis.QualityDefs.QualityCode.Definition
Char.FluxAxis.CoordSys.*

Table 3: New UTypes in v2.0

CoordSys.CoordFrame.ID
CoordSys.CoordFrame.Name
CoordSys.CoordFrame.UCD
CoordSys.CoordFrame.RefPos
CoordSys.FluxFrame.ID
CoordSys.FluxFrame.Name
CoordSys.FluxFrame.UCD
CoordSys.FluxFrame.refID
CoordSys.FluxFrame.PhotCal.*
CoordSys.FluxFrame.PhotCal.PhotmetryFilter.*
CoordSys.RedshiftFrame.ID
CoordSys.RedshiftFrame.UCD
CoordSys.SpaceFrame.ID
CoordSys.SpectralFrame.ID
Data.*Axis.Corrrections.GenericCorr.Name
Data.*Axis.Corrrections.GenericCorr.Value
Data.*Axis.Corrrections.GenericCorr.Applied
Data.*Axis.SystemID

Data.FluxAxis.Corrrections.ApFrac.Value
Data.FluxAxis.Corrrections.ApFrac.Applied

Data.TimeAxis.Accuracy.BinSize
Data.TimeAxis.Accuracy.BinLow
Data.TimeAxis.Accuracy.BinHigh
Data.TimeAxis.Accuracy.StatError
Data.TimeAxis.Accuracy.StatErrLow
Data.TimeAxis.Accuracy.StatErrHigh
Data.TimeAxis.Accuracy.SysError
Data.TimeAxis.Resolution.refVal

Data.BackgroundModel.Accuracy.QualityStatus

Table 3: New UTypes in v2.0

Data.BackgroundModel.Accuracy.StatError
Data.BackgroundModel.Accuracy.StatErrLow
Data.BackgroundModel.Accuracy.StatErrHigh
Data.BackgroundModel.Accuracy.SysError
Dataset.dataProductSubType
Dataset.DataModel.Prefix
Dataset.DataModel.url
ObsConfig.Facility
Proposal.Identifier

NOTE: UType names with the wildcard "*" signify lower-level UTypes that exist in the same node or have similar names. For example, Char.FluxAxis.CoordSys.ID and Char.FluxAxis.CoordSys.FluxFrame fall within the node Char.FluxAxis.CoordSys.*, and the "*" in Data.*Axis.Corrections.GenericCorr.Name could be replaced with Flux, Spectral, Spatial, or Time.

4. Other Changes

A few changes to field parameter default values, FITS keyword names, and applicable UCDs were made between v1.1 and v2.0. Please refer to the Spectrum Data Model v2.0 document to review these changes.