

S3: Simple Self-described Service

A simple access protocol for microphysics simulations

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IVOA interoperability meeting
Garching, Nov 9-12, 2009



Requirements

- **Simplicity.**
 - The simpler the development of the service is, the more people will be willing to implement it \Rightarrow more theoretical models in the VO.
- **Flexibility.**
 - Self-described data/service.
 - The protocol explains how the service must describe itself and how that description must be understood and used.



S3 protocol

- **Dialog** between the application and the model server.
- The server must be able to answer three questions:
 - Which parameters define this model, and what values are allowed for each of them?
 - Which files are available for a given range of those parameters?
 - Give me a particular file.
- Each answer is just a VOTable document (XML)

Tool/Data servers VO (S3) interactions

Tool

1

Give me model description, search params, values...



VOTable

**Data
server**

Tool/Data servers VO (S3) interactions

Tool

1

Give me model description, search params, values...



**Data
server**

VOTable

- The tool (typically) builds a form with search parameters.
- The user selects ranges for the model parameters

(In S3 this can be a multi-step interaction)

Tool/Data servers VO (S3) interactions

Tool

1

Give me model description, search params, values...

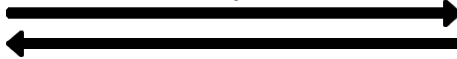


VOTable

**Data
server**

2

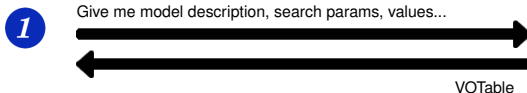
Give me a list of results matching user choices



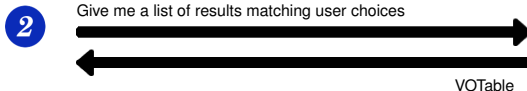
VOTable

Tool/Data servers VO (S3) interactions

Tool



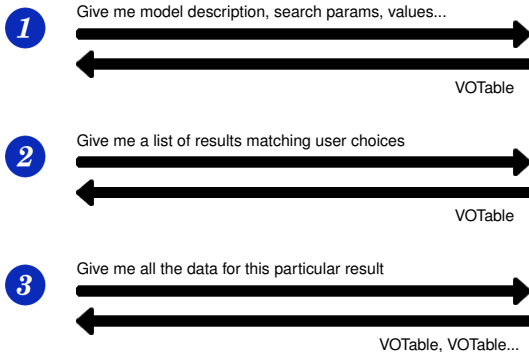
**Data
server**



- The tool builds the table with the results and offers possible options to the user

Tool/Data servers VO (S3) interactions

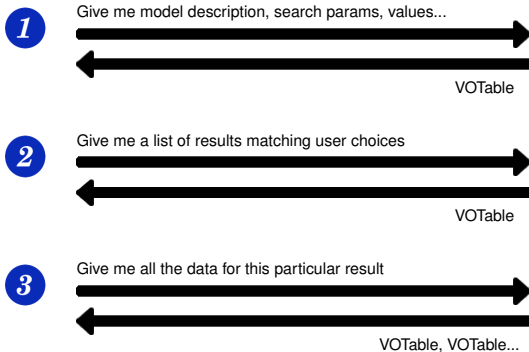
Tool



**Data
server**

Tool/Data servers VO (S3) interactions

Tool



**Data
server**

- The tool makes graphs with that data
- The user downloads the data, etc

IVOA Note

International Virtual Observatory Alliance

IVOA Documents



S3: Proposal for a simple protocol to handle theoretical data (microsimulations)

Version 1.00

IVOA Note 15 October 2008

Interest/Working Group:

[*Theory Interest Group*](#)

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Editor(s):

Carlos Rodrigo, Enrique Solano

Abstract

The aim of this document is to suggest a new protocol designed to provide access to theoretical data/services in the



A working approach

- SSAP: a very similar approach for the case of theoretical spectra.
- Isochrones/evolutionary tracks servers.
 - Spanish VO: NextGen, COND, DUSTY, Siess.
 - Italian VO: BATSI.
- Synthetic photometry service.
- An application using these services to infer physical parameters from observed data (*VOSA*)
 - ~ 200 registered users
- Used for science (*Bayo et al, A&A 2008, 429,277B*)
- Asteroseismology.



Utilities

- S3 wizard
 - A wizard that helps to build a VO service for a theoretical model.
 - Simple inputs
 - The application builds the database, S3 services...
- S3 interface
 - A web interface to test any S3 service.
 - It shows how an application is expected to understand (or not) your service.

Asteroseismology services and VO tool

- Currently 4 different codes integrated.
 - CESAM, CESAM2k structure codes.
 - FILOU, GraCo oscillation codes.
 - More that 500.000 models.
 - Almost 1Tb of data.
 - Growing.
- All interactions between tool and data services: S3
- First version of a Data Model for asteroseismology data.
 - 17 star global properties.
 - 44 star shell variables.
 - 35 seismic properties.
- A complex case.

Asteroseismology

1.- Application: query

<http://www.../s3p.php?format=metadata>

3.- Application: ...

Granada Stellar Seismic Models

Granada Stellar Seismic Models (GSSM-HI) adopts the Granada Team numerical package outputs to be used in VO in order to perform on-line stellar seismology. The package contains the evolutionary code CESAM and two oscillation codes: GraCo and FLOU.

- You can search the database in terms of several parameters (invo year reuse over the ?) symbol to see a description and the available range of values for each one.
- Please, mark the parameters that you want to use in your search, select a range for each one and then click the "Search" button to retrieve a list of the available data.
- Remember that **only the searched parameters will be used in the search**. (Others don't need to be the same than the ones marked to be shown in the result lists)

Structure search parameters				Seismology search parameters			
<input type="checkbox"/> [C]	<input type="checkbox"/> [m]	<input type="checkbox"/> [k]	<input type="checkbox"/> [k]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Lim]	<input type="checkbox"/> [Lim]	<input type="checkbox"/> [Lim]	<input type="checkbox"/> [Lim]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Logg]	<input type="checkbox"/> [Logg]	<input type="checkbox"/> [Logg]	<input type="checkbox"/> [Logg]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Density]	<input type="checkbox"/> [Density]	<input type="checkbox"/> [Density]	<input type="checkbox"/> [Density]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Age]	<input type="checkbox"/> [Age]	<input type="checkbox"/> [Age]	<input type="checkbox"/> [Age]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Fe/H]	<input type="checkbox"/> [Fe/H]	<input type="checkbox"/> [Fe/H]	<input type="checkbox"/> [Fe/H]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Z]	<input type="checkbox"/> [Z]	<input type="checkbox"/> [Z]	<input type="checkbox"/> [Z]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Tcore]	<input type="checkbox"/> [Tcore]	<input type="checkbox"/> [Tcore]	<input type="checkbox"/> [Tcore]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [k]	<input type="checkbox"/> [k]	<input type="checkbox"/> [k]	<input type="checkbox"/> [k]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Nmax]	<input type="checkbox"/> [Nmax]	<input type="checkbox"/> [Nmax]	<input type="checkbox"/> [Nmax]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Age]	<input type="checkbox"/> [Age]	<input type="checkbox"/> [Age]	<input type="checkbox"/> [Age]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Wave]	<input type="checkbox"/> [Wave]	<input type="checkbox"/> [Wave]	<input type="checkbox"/> [Wave]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Time]	<input type="checkbox"/> [Time]	<input type="checkbox"/> [Time]	<input type="checkbox"/> [Time]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Ncol]	<input type="checkbox"/> [Ncol]	<input type="checkbox"/> [Ncol]	<input type="checkbox"/> [Ncol]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]
<input type="checkbox"/> [Over]	<input type="checkbox"/> [Over]	<input type="checkbox"/> [Over]	<input type="checkbox"/> [Over]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]	<input type="checkbox"/> [P]

Search Reset

2.- Server: answer

```

<TABLE version="1.1" xmlns:metadata="http://www.ivoa.net/xml/OSTA/v1.1" <RESORCE type="meta">
<DESCRIPTION>Granada Stellar Seismic Models (GSSM-VO) adopts the Granada Team numerical package outputs to be
<PARAM name="concept" value="http://localhost:80/carlca/voa/theory/astrosam/concept.php"/>
<ORIG name="bibcode" scd="meta.bib" value="1995AJ...124...107H">
<DESCRIPTION>CESAM evolutionary codes</DESCRIPTION>
</PARAM>
<PARAM name="bibcode" scd="meta.bib" value="2008AJ...205...216..120H">
<DESCRIPTION>GraCo oscillation code</DESCRIPTION>
</PARAM>
<PARAM name="bibcode" scd="meta.bib" value="2008AJ...205...316..155S">
<DESCRIPTION>FLOU oscillation code</DESCRIPTION>
</PARAM>
<PARAM name="INPUT: buff_range" scd="phys.temperature" unit="K" utype="Star buff" datatype="float">
<DESCRIPTION>Effective temperature</DESCRIPTION>
<value>
<min value="4300.54250462"/>
<max value="9624.30066137"/>
</value>
</PARAM>
<PARAM name="INPUT: Lum_range" scd="phys.luminosity" unit="Lsun" utype="Star Luminosity" datatype="float">
<DESCRIPTION>Luminosity (L/Lsun), Lum=3.029440 erg/s</DESCRIPTION>
<value>
<min value="17.3095054897"/>
</value>
</PARAM>
<PARAM name="INPUT: Logg_range" scd="phys.gravity" unit="" utype="Star logg" datatype="float">
<DESCRIPTION>Log(g) [g in cm/s^2]</DESCRIPTION>
<value>
<min value="3.806433001"/>
<max value="4.4386790287"/>
</value>
</PARAM>
<PARAM name="INPUT: density_range" scd="phys.density" unit="g/cm^3" utype="Star Density" datatype="float">
<DESCRIPTION>Average density</DESCRIPTION>
<value>
<min value="0.18725062493"/>
<max value="1.18750725442"/>
</value>
</PARAM>
<PARAM name="INPUT: age_range" scd="time.age" unit="Myr" utype="Star Age" datatype="float">
<DESCRIPTION>Age</DESCRIPTION>
<value>
<min value="46.50"/>
<max value="9800.8"/>
</value>
</PARAM>
<PARAM name="INPUT: fah_range" scd="phys.abund.Fa" unit="" utype="Star fah" datatype="float">
<DESCRIPTION>[Fe/H]</DESCRIPTION>
<value>
<min value="-6.4004"/>
<max value="0.03003"/>
</value>
</PARAM>
<PARAM name="INPUT: z_range" scd="phys.abund.Z" unit="" utype="Star Z" datatype="float">
<DESCRIPTION>Relative fraction (in mass) of metals, i.e. elements heavier than He.</DESCRIPTION>
<value>
<min value="0.0072845094614"/>
<max value="0.0177249368044"/>
</value>
</PARAM>
<PARAM name="INPUT: hcent_range" scd="phys.abund.Z" unit="" utype="Star hcent" datatype="float">
<DESCRIPTION>Hydrogen central fraction</DESCRIPTION>
<value>

```



Asteroseismology

1.- Application: query

<http://www.../s3p.php?format=metadata>

3.- Application: ...

Granada Stellar Seismic Models

Granada Stellar Seismic Models (GSSM-HI) adopts the Granada Team numerical package outputs to be used in VO in order to perform on-line stellar seismology. This package contains the evolutionary code CESAM and two oscillation codes: GraCo and FLOU.

You can search the database in terms of several parameters (invo year reuse over the (F) symbol to see a description and the available range of values for each one).

- Repeat, mark the parameters that you want to use in your search, select a range for each one and then click the "Search" button to retrieve a list of the available data.
- Remember that **only the marked parameters will be used in the search**.
- (This don't need to be the same than the ones marked to be shown in the list of results)

Structure search parameters				Seismology search parameters			
<input type="checkbox"/>	Fe	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	FD	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	Lim	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	F1	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	Logg	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	F01	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	Intensity	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	COG	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	Age	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	PK	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	Yield	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	PKPK	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	Y	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ymax	<input type="text"/>	<input type="checkbox"/>
<input type="checkbox"/>	Ycore	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	h	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	hmax	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	hmin	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	Wave	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	lrv	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	hsv	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>			
<input type="checkbox"/>	Over	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Search Reset

2.- Server: answer

```

<?XML version="1.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-1" >
<DESCRIPTION type="meta">
<DESCRIPTION>Granada Stellar Seismic Models (GSSM-HI) adopts the Granada Team numerical package outputs to be
<PARAM name="concepta" value="http://localhost:80/carlca/vo/theory/astrosam/concepta.php"/>
<PARAM name="bibcode" scd="meta.bib" value="1995ApJ...505..124..197M">
<DESCRIPTION>CESAM evolutionary codes</DESCRIPTION>
</PARAM>
<PARAM name="bibcode" scd="meta.bib" value="2008ApJ...665..120M">
<DESCRIPTION>GraCo oscillation code</DESCRIPTION>
</PARAM>
<PARAM name="bibcode" scd="meta.bib" value="2008ApJ...665..1555">
<DESCRIPTION>FLOU oscillation code</DESCRIPTION>
</PARAM>
<PARAM name="INPUT: buff_range" scd="phys.temperature" unit="K" utype="Star buff" datatype="float">
<DESCRIPTION>Effective temperature</DESCRIPTION>
<value>
<min value="4000.54250462"/>
<max value="9824.90066137"/>
</value>
</PARAM>
<PARAM name="INPUT: Lum_range" scd="phys.luminosity" unit="Lsun" utype="Star Luminosity" datatype="float">
<DESCRIPTION>Luminosity (L/Lsun), Lum=3.69E+00 erg/s</DESCRIPTION>
<value>
<min value="2.4028780048"/>
<max value="17.9095054897"/>
</value>
</PARAM>
<PARAM name="INPUT: Logg_range" scd="phys.gravity" unit="" utype="Star logg" datatype="float">
<DESCRIPTION>Log(g) [g in cm/s^2]</DESCRIPTION>
<value>
<min value="3.8065430051"/>
<max value="4.4385795287"/>
</value>
</PARAM>
<PARAM name="INPUT: density_range" scd="phys.density" unit="g/cm^3" utype="Star Density" datatype="float">
<DESCRIPTION>Average density</DESCRIPTION>
<value>
<min value="0.187125054951"/>
<max value="1.18750725442"/>
</value>
</PARAM>
<PARAM name="INPUT: age_range" scd="time.age" unit="Myr" utype="Star Age" datatype="float">
<DESCRIPTION>Age</DESCRIPTION>
<value>
<min value="46.95"/>
<max value="9800.8"/>
</value>
</PARAM>
<PARAM name="INPUT:feh_range" scd="phys.abund.Fe" unit="" utype="Star feh" datatype="float">
<DESCRIPTION>Fe/H</DESCRIPTION>
<value>
<min value="-6.4004"/>
<max value="0.0305"/>
</value>
</PARAM>
<PARAM name="INPUT: z_range" scd="phys.abund.Z" unit="" utype="Star Z" datatype="float">
<DESCRIPTION>Relative fraction (in mass) of metals, i.e. elements heavier than He.</DESCRIPTION>
<value>
<min value="0.0072840508414"/>
<max value="0.017745938844"/>
</value>
</PARAM>
<PARAM name="INPUT: hcvr_range" scd="phys.abund.C" unit="" utype="Star hcvr" datatype="float">
<DESCRIPTION>Hydrogen central fraction</DESCRIPTION>
<value>

```

Asteroseismology

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<http://www.../s3p.php?format=metadata>

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- Repeat, until the parameters that you want to use in your search, select a range for each one and then click the "Search" button to retrieve a list of the available data.
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Structure search parameters				Seismology search parameters			
(T) T _{eff}	min	>	max	(T) T ₀	<	>	range
(T) Lim	<	>	range	(T) T ₁	<	>	range
(T) Logg ₀	<	>	range	(T) P ₀₁	<	>	range
(T) Density	<	>	range	(T) C ₀₀₁	<	>	range
(T) Age	<	>	range	(T) P ₀₂	<	>	range
(T) P ₀₁₁	<	>	range	(T) P ₀₃	<	>	range
(T) P ₀₂₁	<	>	range	(T) P ₀₄	<	>	range
(T) P ₀₃₁	<	>	range	(T) P ₀₅	<	>	range
(T) P ₀₄₁	<	>	range	(T) P ₀₆	<	>	range
(T) P ₀₅₁	<	>	range	(T) P ₀₇	<	>	range
(T) P ₀₆₁	<	>	range	(T) P ₀₈	<	>	range
(T) P ₀₇₁	<	>	range	(T) P ₀₉	<	>	range
(T) P ₀₈₁	<	>	range	(T) P ₁₀	<	>	range
(T) P ₀₉₁	<	>	range	(T) P ₁₁	<	>	range
(T) P ₁₀₁	<	>	range	(T) P ₁₂	<	>	range
(T) P ₁₁₁	<	>	range	(T) P ₁₃	<	>	range
(T) P ₁₂₁	<	>	range	(T) P ₁₄	<	>	range
(T) P ₁₃₁	<	>	range	(T) P ₁₅	<	>	range
(T) P ₁₄₁	<	>	range	(T) P ₁₆	<	>	range
(T) P ₁₅₁	<	>	range	(T) P ₁₇	<	>	range
(T) P ₁₆₁	<	>	range	(T) P ₁₈	<	>	range
(T) P ₁₇₁	<	>	range	(T) P ₁₉	<	>	range
(T) P ₁₈₁	<	>	range	(T) P ₂₀	<	>	range
(T) P ₁₉₁	<	>	range	(T) P ₂₁	<	>	range
(T) P ₂₀₁	<	>	range	(T) P ₂₂	<	>	range
(T) P ₂₁₁	<	>	range	(T) P ₂₃	<	>	range
(T) P ₂₂₁	<	>	range	(T) P ₂₄	<	>	range
(T) P ₂₃₁	<	>	range	(T) P ₂₅	<	>	range
(T) P ₂₄₁	<	>	range	(T) P ₂₆	<	>	range
(T) P ₂₅₁	<	>	range	(T) P ₂₇	<	>	range
(T) P ₂₆₁	<	>	range	(T) P ₂₈	<	>	range
(T) P ₂₇₁	<	>	range	(T) P ₂₉	<	>	range
(T) P ₂₈₁	<	>	range	(T) P ₃₀	<	>	range
(T) P ₂₉₁	<	>	range	(T) P ₃₁	<	>	range
(T) P ₃₀₁	<	>	range	(T) P ₃₂	<	>	range
(T) P ₃₁₁	<	>	range	(T) P ₃₃	<	>	range
(T) P ₃₂₁	<	>	range	(T) P ₃₄	<	>	range
(T) P ₃₃₁	<	>	range	(T) P ₃₅	<	>	range
(T) P ₃₄₁	<	>	range	(T) P ₃₆	<	>	range
(T) P ₃₅₁	<	>	range	(T) P ₃₇	<	>	range
(T) P ₃₆₁	<	>	range	(T) P ₃₈	<	>	range
(T) P ₃₇₁	<	>	range	(T) P ₃₉	<	>	range
(T) P ₃₈₁	<	>	range	(T) P ₄₀	<	>	range
(T) P ₃₉₁	<	>	range	(T) P ₄₁	<	>	range
(T) P ₄₀₁	<	>	range	(T) P ₄₂	<	>	range
(T) P ₄₁₁	<	>	range	(T) P ₄₃	<	>	range
(T) P ₄₂₁	<	>	range	(T) P ₄₄	<	>	range
(T) P ₄₃₁	<	>	range	(T) P ₄₅	<	>	range
(T) P ₄₄₁	<	>	range	(T) P ₄₆	<	>	range
(T) P ₄₅₁	<	>	range	(T) P ₄₇	<	>	range
(T) P ₄₆₁	<	>	range	(T) P ₄₈	<	>	range
(T) P ₄₇₁	<	>	range	(T) P ₄₉	<	>	range
(T) P ₄₈₁	<	>	range	(T) P ₅₀	<	>	range
(T) P ₄₉₁	<	>	range	(T) P ₅₁	<	>	range
(T) P ₅₀₁	<	>	range	(T) P ₅₂	<	>	range
(T) P ₅₁₁	<	>	range	(T) P ₅₃	<	>	range
(T) P ₅₂₁	<	>	range	(T) P ₅₄	<	>	range
(T) P ₅₃₁	<	>	range	(T) P ₅₅	<	>	range
(T) P ₅₄₁	<	>	range	(T) P ₅₆	<	>	range
(T) P ₅₅₁	<	>	range	(T) P ₅₇	<	>	range
(T) P ₅₆₁	<	>	range	(T) P ₅₈	<	>	range
(T) P ₅₇₁	<	>	range	(T) P ₅₉	<	>	range
(T) P ₅₈₁	<	>	range	(T) P ₆₀	<	>	range
(T) P ₅₉₁	<	>	range	(T) P ₆₁	<	>	range
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(T) P ₈₂₁	<	>	range	(T) P ₈₄	<	>	range
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Asteroseismology

4.- Application: query

<http://www.../s3p.php?teff=8000/8300>

6.- Application: ...

Granada Stellar Seismic Models

Granada Stellar Seismic Models (GSSM-001) exports the granule flux convolved package outputs to the AWS S3 in order to perform on-site asteroseismic. This package completely replicates granule flux (linear convolved) outputs. <https://www.astronomy.swin.edu.au/~simon/>

Do not use the files listed for your research. It is for the public to use for research.

Star Name	Teff (K)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)	logg (cgs)
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02	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
03	7947	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
04	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
05	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
06	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
07	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
08	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
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12	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
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14	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
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33	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
34	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
35	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
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37	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
38	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
39	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642
40	8349	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642	3.642

5.- Server: answer

```
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Asteroseismology

SUMMARY request

- In some cases the search produces a huge amount of results
 - Big computation time in the server side
 - Big VOTable download time
 - Even browser dies trying to display it
- First ask for summary
 - ?...&request=summary
 - Number of results available
 - Range available for each search parameter (once user constrains are applied)
- Very useful

Asteroseismology

SUMMARY request

Granada Stellar Seismic Models

Granada Stellar Seismic Models (GSSM-VO) adapts the Granada Team numerical package outputs to be used in VO in order to perform on-line stellar seismology. This package contains the evolutionary codes [CESAM](#) and [CESAM2K](#) and two oscillation codes: [GraCo](#) and [FILOU](#)

CESAM2k evolutionary code

136587 results have been found for your search criteria.

Summary table

Show Results | HR diag | New Search

	T_{eff}	Lum	Log(g)	Density	Age	[Fe/H]	Z	Hcent	R _*	Mass	Vrot	Wrot	Trot	α_{MLT}	Over.
Min	7000.0000	2.9811	3.2448	0.0159	0	-0.5200	0.0055	0.6991	1.1211	1.2502				0.5000	0.1000
Max	8000.0000	76.0390	4.4574	1.2884	3672.3000	0.0800	0.0206	0.7473	5.6848	2.1003	0	0	0	1.5000	0.3000

References:

- [CESAM2k evolutionary code](#)

- Very useful

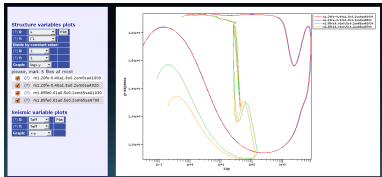
Asteroseismology

7.- Application: queries (...)

<http://www.../s3p.php?id=100&type=osc>

8.- Server: answers (...)

9.- Application: ...



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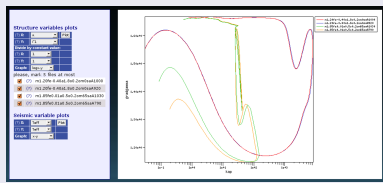



Asteroseismology

7.- Application: queries (...)

<http://www.../s3p.php?id=100&type=osc>

9.- Application: ...



8.- Server: answers (...)

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Asteroseismology

CUTOUT?

- Data files are often very big with many columns
 - Being able to ask only for the wanted columns
 - In the desired range for each one
 - ?...cols=alfa,beta...&ranges=a1/a2,b1/b2...
- Being able to ask which columns are available
 - request=summary ?
 - We don't really need it in this case (data model)
- More efficiency

In summary

- S3 is a useful protocol
 - Even for quite complex cases.
- First version of a data model for asteroseismology
- Some improvements
 - SUMMARY
 - CUTOUT



THANK YOU!