ctools - Bug #1418

ctools module seems to corrupt gammalib module

02/05/2015 11:49 AM - Knödlseder Jürgen

Status:	Closed	**Start date:**	02/05/2015
Priority:	Low	**Due date:**	
Assigned To:	Bregeon Johan	**% Done:**	100%
Category:		**Estimated time:**	0.00 hour
Target version:	1.0.0		

Description

I just encountered this strange problem:

```
$ python
>>> import ctools
>>> import gammalib
>>> obs = gammalib.GObservations()
>>> cta = gammalib.GCTAObservation()
>>> obs.append(cta)
<Swig Object of type 'GCTAObservation *' at 0x10042cf90>
>>> print obs[0]
<Swig Object of type 'GCTAObservation *' at 0x102174a50>
```

```
$ python
>>> import gammalib
>>> obs = gammalib.GObservations()
>>> cta = gammalib.GCTAObservation()
>>> obs.append(cta)
<gammalib.cta.GCTAObservation; proxy of <Swig Object of type 'GCTAObservation *' at 0x1020d5690> >
>>> print obs[0]
=== GCTAObservation ===
 Name ......................:
 Identifier ................:
 Instrument ................: CTA
 Event file ................:
 Event type ................:
 Statistics ................: Poisson
 Ontime ....................: 0 s
 Livetime ..................: 0 s
 Deadtime correction .......: 0
 User energy range .........: undefined
=== GCTAPointing ===
 Pointing direction ........: (RA,Dec)=(not initialised)
 Response function .........: undefined
```

Depending whether ctools is imported or not, gammalib behaves differently.

History

#1 - 02/05/2015 12:09 PM - Knödlseder Jürgen

- Status changed from New to In Progress

Interesting, the order of the import has an impact.

The following works:

```
$ python
>>> import gammalib
>>> import ctools
>>> obs = gammalib.GObservations()
>>> cta = gammalib.GCTAObservation()
>>> obs.append(cta)
>>> print(obs[0])
=== GCTAObservation ===
 Name ......................:
 Identifier ................:
 Instrument ................: CTA
 Event file ................:
 Event type ................:
 Statistics ................: Poisson
 Ontime ....................: 0 s
 Livetime ..................: 0 s
 Deadtime correction .......: 0
 User energy range .........: undefined
=== GCTAPointing ===
 Pointing direction ........: (RA,Dec)=(not initialised)
 Response function .........: undefined
```

#2 - 02/06/2015 02:22 PM - Knödlseder Jürgen

- Priority changed from Urgent to Low

- % Done changed from 0 to 10

There is maybe no way around this. Just need to import gammalib before ctools.

Maybe a Python / SWIG geek can fix this.

#3 - 06/30/2015 10:58 AM - Knödlseder Jürgen

- Assigned To changed from Knödlseder Jürgen to Bregeon Johan

#4 - 06/30/2015 12:12 PM - Bregeon Johan

strange thing ideed...

in the correct case obs[0] is a "proxy":
<gammalib.cta.GCTAObservation; proxy of <Swig Object of type 'GCTAObservation *' at 0x1020d5690> >

in the bad case, obs[0] is just a pointer:
<Swig Object of type 'GCTAObservation *' at 0x10042cf90>

Still more funny is that cta is always a "proxy", so strange things happen when cta is appended to obs.

#5 - 06/30/2015 12:44 PM - Bregeon Johan

when importing ctools, some gammalib modules are imported, but do not seem to be regularly accessible:

```
>>> import ctools
>>> import sys
>>> print sys.modules.keys()
['gammalib.sky', 'encodings.codecs', 'sysconfig', 'os.path', 'encodings.encodings', '_mwl', 'ctools.os', 'imp', '_app', 'zipimport', 'encodings.utf_8',
 'ctools.imp', '_com', '_support', '_cta', 'signal', 'gammalib.support', 'gammalib.gammalib', 'stat', 'ctools.tools', 'encodings', 'abc', 're', '_fits', 'mpl_toolkits',
 'gammalib.linalg', 'UserDict', 'swig_runtime_data4', 'codecs', 'ctools.gammalib', 'paste', 'gammalib.fits', 'gammalib', '_locale', '_lat', 'traceback',
 'gammalib.model', 'os', 'gammalib.imp', '_sre', '_test', 'gammalib.opt', '__builtin__', '_sky', 'gammalib.numerics', 'posixpath', 'errno', '_obs', '_vo',
 'sre_constants', 'gammalib.mwl', '_warnings', 'gammalib.com', 'encodings.__builtin__', '_codecs', '_numerics', 'gammalib.sys', '_base',
 '_sysconfigdata', 'gammalib.obs', 'gammalib.vo', 'posix', 'encodings.aliases', 'exceptions', 'sre_parse', 'abrt_exception_handler', 'gammalib.test',
 'copy_reg', 'sre_compile', 'gammalib.lat', '_tools', 'ctools.sys', 'site', '__main__', 'ctools', 'linecache', 'gammalib.app', 'gammalib.base',
 'gammalib.xspec', '_xml', '_abcoll', 'gammalib.cta', 'genericpath', '_opt', 'warnings', '_linalg', 'sys', 'readline', 'types', '_model', '_weakref', 'gammalib.os',
 '_weakrefset', 'gammalib.xml', '_xspec']
>>> dir(gammalib)
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'gammalib' is not defined
>>> dir(gammalib.gammlib)
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'gammalib' is not defined
```

Overall, I think the root problem is that the user can import the ctools without importing gammalib, ending up with a system in a fishy state.
The simple solution (without trying to fully understand the strange behaviour) is to import gammalib at the top of the ctools __init__.py.

```
> head -5 $CTOOLS/lib64/python2.7/site-packages/ctools/__init__.py
# import gammalib first
import gammalib

# Import sub modules
from .tools import *
```

As an additional note, for a reason that I do not understand, with just import ctools, the gammalib module does not become
visible to the user so that the user would not even know that gammalib has been imported before ctools,
and would have to import gammalib anyway to have the module fully available in its script/session.

#6 - 06/30/2015 12:55 PM - Deil Christoph

+1 to do this change now ... if there's new or remaining issues we'll notice it throughout the week.

This warning in the user manual should be removed:
https://github.com/ctools/ctools/blame/d58354de28fa603dbb1599f3f5f0e382763548b2/doc/source/user_manual/getting_started/python.rst#L21

Jürgen, do you want to do this change directly or should I make a commit?

#7 - 06/30/2015 01:13 PM - Bregeon Johan

for the fun of it, I have created py firt PR...
https://github.com/ctools/ctools/pull/1

woohoo smile.png

ok... too much excitement !

https://github.com/bregeon/ctools/tree/fiximport

#8 - 06/30/2015 02:43 PM - Knödlseder Jürgen

- Status changed from In Progress to Feedback

- % Done changed from 10 to 100

The problem is now fixed:

```
>>> import ctools
>>> import gammalib
>>> obs = gammalib.GObservations()
>>> cta = gammalib.GCTAObservation()
>>> obs.append(cta)
<gammalib.cta.GCTAObservation; proxy of <Swig Object of type 'GCTAObservation *' at 0x10226b630> >
>>> print obs[0]
=== GCTAObservation ===
 Name ......................: 
 Identifier ................: 
 Instrument ................: CTA
 Event file ................: 
 Event type ................: 
 Statistics ................: Poisson
 Ontime ....................: 0 s
 Livetime ..................: 0 s
 Deadtime correction .......: 1
 User energy range .........: undefined
=== GCTAPointing ===
 Pointing direction ........: (RA,Dec)=(not initialised)
 Response function .........: undefined
```

#9 - 06/30/2015 02:47 PM - Knödlseder Jürgen

- Status changed from Feedback to Closed

Merged now into devel.