

## GammaLib - How\_to\_create\_a\_cast\_in\_Python - # 1

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### How to create a cast in Python?

Ideally, one would like to avoid casts, as they indicate a poorly defined interface. However, sometimes one still would like to have a cast. An example is the `GInstDir` class, which defines an abstract direction in the instrument system. Sometimes, the direction has nothing to do with a position on the sky (for example for the SPI telescope on INTEGRAL which is a non-imaging telescope), sometimes the instrument direction is identical to a sky position (for all imaging telescopes). So how can we get out of `GInstDir` object the sky direction? We need a cast.

A cast can be implemented as a class extension in the SWIG interface. Here a cast for the `GCTAInstDir` class:

```
%extend GCTAInstDir {
  GCTAInstDir(GInstDir* dir) {
    GCTAInstDir* ptr = dynamic_cast<GCTAInstDir*>(dir);
    if (ptr != NULL) {
      return (ptr->clone());
    }
    else {
      throw GException::bad_type("GCTAInstDir(GInstDir*)", "GInstDir not of type GCTAInstDir");
    }
  }
};
```

It is used for example as in

```
instdir = GCTAInstDir(dir)
```

Note that the extension does in fact not really implement a cast, but it provides a deep copy of the instrument direction. The method also verifies that the cast is valid.