

Job Options Editor (JOE)

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The Gaudi / Athena Job Options Editor (JOE) is a QT¹-based graphical editor written in Python that assists the physicist working within the Gaudi² / Athena³ physics frameworks with the tedious and often error-prone task of creating and manipulating Gaudi / Athena job options attribute configuration files (typically known as job option files) by eliminating the need for job option file syntax familiarity and providing attribute value hints and suggestions.

JOE is an offshoot project of the joint ATLAS⁴ / LHCb⁵ project, Gaudi / Athena and Grid Alliance (GANGA⁶). Originally designed as part of an ATLAS fast simulation tool (ATLFAST⁷) plug-in for GANGA with rudimentary ATLFAST job option editing capabilities, JOE has been completely redesigned and reimplemented from the ground up to provide improved editing capabilities for generic Gaudi and Athena job options. JOE is now a standalone application that can be used independent of GANGA although GANGA will still invoke JOE for job option editing purposes.

The main features of JOE are summarized as follows:

- 1) The user-friendly GUI assists the user in the creation and manipulation of job option files eliminating human errors arising from incorrectly spelt options/values, incorrect syntax and value types. JOE also incorporates an option-type aware user interface presentation selector that chooses

the correct presentation format dynamically (e.g. drop-down menus for discrete options, arbitrary value entry for basic options, value appending for list-type options, etc.) for individual job option attributes.

- 2) Collapsible tree representation of job option files allows the user to view the whole job option file in its entirety whilst expanding only the sections, attributes or included files of interest on demand.
- 3) Multiple job option files may be open for simultaneously editing using window tabs, a style popularised by modern IDEs.
- 4) Support for both text-based and Python-based job option files has been built into JOE so users can edit both formats interchangeably.
- 5) Job option files can be archived in two different modes. The first mode defines the user-modified job options file as a 2-tuple comprising a template (i.e. original job option files from the official release) and changes made to the template. This allows customised job options to be portable across different software releases. The second mode saves the user-modified job options file as a single job options file and this can be useful when creating new private templates or sharing job option files within the collaboration.
- 6) There is also a preview function that allows the user to preview the actual job options file that will be created from the version currently being edited.
- 7) The JOE GUI is decoupled from the underlying JOE core classes and methods and the latter has a clear set of APIs that can be used by developers. However, these classes and methods do not perform editor-related functions (since the editor is essentially a GUI component) but Gaudi / Athena specific functions.

1 <http://www.trolltech.com>
2 <http://proj-gaudi.web.cern.ch/proj-gaudi/>
3 <http://atlas.web.cern.ch/Atlas/GROUPS/SOFTWARE/00/architecture/>
4 <http://atlas.web.cern.ch/Atlas/>
5 <http://lhcb.web.cern.ch/lhcb/>
6 <http://ganga.web.cern.ch/>
7 <http://www.hep.ucl.ac.uk/atlas/atlfast>

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Future improvements planned for JOE include:

1. Integration with ATLAS job option attribute repository service. The current job option attribute validation component of JOE contain multiple Python dictionaries of all existing job option properties, associated attributes and values for a specific set of ATLAS and LHCb software releases. This set of dictionaries will now be stored in a database and JOE will access the required information via a SOAP interface. This will allow new dictionaries to be used by JOE without user having to perform updates to JOE.
2. Automatic software update feature to allow for easy JOE upgrades. This will ensure that the user has the latest version of JOE with the least amount of hassle.
3. As a convenience feature, job option files can be e-mailed from within JOE.

JOE is designed to offer non-expert Gaudi / Athena users a quickstart alternative to unassisted job option file hacking. For experienced users, it attempts to present a convenient and consistent environment to create, manipulate and archive job options.