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# hepmc2dot Documentation

*Release 0.1*

**RelEng Team**

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The `hepmc2dot.py` scripts converts ASCII files generated by `HepMC : : IO_GenEvent` to the common DOT graph format. It is tested only for Python 2.7 at this point.

HepMC is a High Energy Physics package for storing Monte Carlo event records. These records can typically be represented in a tree structure, where particles are edges and interaction vertices are nodes.

The official HepMC documentation is at: <http://hepmc.web.cern.ch/hepmc/>



# CHAPTER 1

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## Usage

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Convert HepMC ASCII file `hepmcfile.txt` to DOT graph and store there result in `dotfile.dot`:

```
hepmc2dot.py hepfile.txt dotfile.dot
```





## CHAPTER 2

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### Source

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The source repository is on [GitHub](#).



### hepmc2dot module

**class** `hepmc2dot.HepDotWriter(dotfile)`

Bases: `object`

Generates a dot file representing the given particles, interaction vertices and events

**add\_outgoing\_particle** (*raw\_hepmc\_line*)

**close** ()

Terminates the currently open event and closes the output file.

**start\_new\_event** (*raw\_hepmc\_line*)

**start\_new\_vertex** (*raw\_hepmc\_line*)

`hepmc2dot.convert` (*hepmc\_file*, *dot\_file*)

Converts the given HepMC::IO\_GenEvent formatted file into a DOT formatted file

`hepmc2dot.main` (*argv*)

Parses the given command line arguments and runs the conversion from the specified input HepMC::IO\_GenEvent to the specified DOT output file

### test package

#### Submodules

#### test.test\_hepmc2dot module

**class** `test.test_hepmc2dot.Test_convert` (*methodName='runTest'*)

Bases: `unittest.case.TestCase`

**setUp** ()

```
tearDown ()
test_emptyHepMCFile_expectEmptyDotFile ()
test_eventTwoVerticesWithOneConnectingParticleAndOneParticleWithoutEndVertex_expectSame
test_eventTwoVerticesWithOneConnectingParticleAndTwoParticlesWithoutEndVertices_expect
test_eventTwoVerticesWithOneConnectingParticle_expectSameRepresentationInDot ()
test_eventWithOneHepMCVertex_expectOneEventWithOneVertexInDot ()
test_oneEmptyHepMCEvent_expectOneEmptyDotDigraph ()
test_oneVertexTwoOutgoingParticlesWithoutEndVertices_expectSameRepresentationInDot ()
test_oneVertexWithOutgoingParticleWithoutEndVertex_expectSameRepresentationInDot ()
test_unknownDataAndOneEmptyEventInHepMCFile_expectOneEmptyDotDigraph ()
test_unknownDataInHepMCFile_expectEmptyDotFile ()
class test.test_hepmc2dot.Test_get_dot_particle (methodName='runTest')
    Bases: unittest.case.TestCase
    test_finalStateParticle_expectDummyEndVertex ()
    test_floatEnergy_expectEnergyRounding ()
    test_stringArguments_expectAutomaticConversion ()
class test.test_hepmc2dot.Test_get_dot_vertex (methodName='runTest')
    Bases: unittest.case.TestCase
    assert_get_vertex (expected_dot, *args, **kwargs)
    test_dummyVertexNegativeID_expectDummyVertexNameAndEmptyLabel ()
    test_dummyVertex_expectDummyVertexNameAndEmptyLabel ()
    test_longFloatingPointRZ_expectRoundedRZ ()
    test_negativeVertexID_expectPositiveDotVertexNameAndNegativeIDInLabel ()
    test_positiveVertexID_expectPositiveDotVertexNameAndPositiveIDInLabel ()
    test_scaleProvided_expectScaledPosition ()
    test_scaledDummy_expectScaledPosition ()
    test_strVtxArguments_expectAutomaticConversion ()
class test.test_hepmc2dot.Test_get_node_name (methodName='runTest')
    Bases: unittest.case.TestCase
    test_dummyVertex_expectDummyNodeName ()
    test_negativeBarcode_expectPositiveNumInNodeName ()
    test_positiveBarcode_expectPositiveNumInNodeName ()
    test_strArguments_expectAutomaticConversion ()
class test.test_hepmc2dot.Test_main_withTemporaryFilesFixture (methodName='runTest')
    Bases: unittest.case.TestCase
    setUp ()
    tearDown ()
```

```
test_complexHepMCFile_expectCorrespondingDotFileContents ()
test_emptyHepMCFile_expectEmptyDotFile ()
test_nonExistingHepMCFile_expectIOError ()
test_nonExistingHepMCNorDotFiles_expectIOError ()
class test.test_hepmc2dot.Test_main_withoutTemporaryFilesFixture (methodName='runTest')
    Bases: unittest.case.TestCase
    test_noArgumentsProvided_expectSystemExit ()
    test_onlyOneArgumentProvided_expectSystemExit ()
```

## Module contents



## CHAPTER 4

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### Indices and tables

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