

Packaging the HEP simulation stack on conda-forge

Summary of IRIS-HEP Fellows Project



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Outline

Project & Objectives:

This project was an attempt to package as many of the dependencies of the HEP simulation stack on conda-forge as possible like LHAPDF, HepMC2, HepMC3 and other packages.

Introduced changes to these dependencies:

- HepMC2
- HepMC3
- pyhepmc

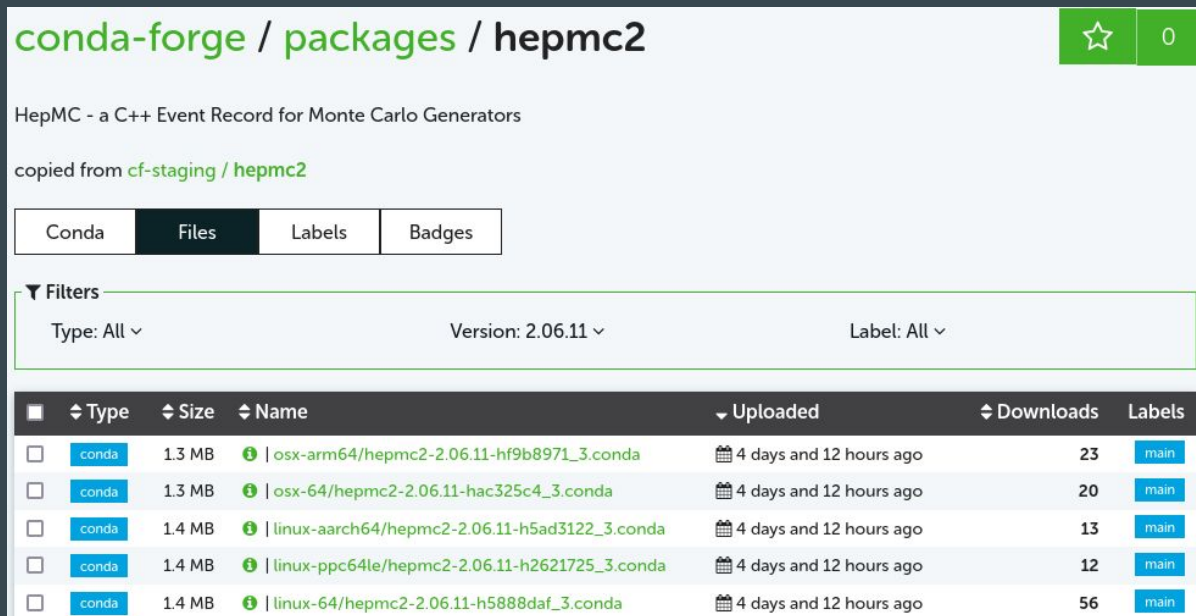
HepMC2

- Added and specified aarch64, ppc64le and osx_64 platforms

```
1 + build_platform:
2 +   linux_aarch64: linux_64
3 +   linux_ppc64le: linux_64
4 +   osx_arm64: osx_64
5 + provider:
6 +   linux_aarch64: default
7 +   linux_ppc64le: default
8 + test: native_and_emulated
9   conda_forge_output_validation: true
10  github:
11    branch: main
```

HepMC2

The package distributed on conda forge with added builds:



conda-forge / packages / hepmc2 ☆ 0

HepMC - a C++ Event Record for Monte Carlo Generators

copied from [cf-staging / hepmc2](#)

Conda **Files** Labels Badges

Filters

Type: All Version: 2.06.11 Label: All

<input type="checkbox"/>	Type	Size	Name	Uploaded	Downloads	Labels
<input type="checkbox"/>	conda	1.3 MB	osx-arm64/hepmc2-2.06.11-hf9b8971_3.conda	4 days and 12 hours ago	23	main
<input type="checkbox"/>	conda	1.3 MB	osx-64/hepmc2-2.06.11-hac325c4_3.conda	4 days and 12 hours ago	20	main
<input type="checkbox"/>	conda	1.4 MB	linux-aarch64/hepmc2-2.06.11-h5ad3122_3.conda	4 days and 12 hours ago	13	main
<input type="checkbox"/>	conda	1.4 MB	linux-ppc64le/hepmc2-2.06.11-h2621725_3.conda	4 days and 12 hours ago	12	main
<input type="checkbox"/>	conda	1.4 MB	linux-64/hepmc2-2.06.11-h5888daf_3.conda	4 days and 12 hours ago	56	main

HepMC3

- Added macOS and Linux aarch64 and ppc64le builds
- Re-rendered with `{{ stdlib("c") }}`
- Updated sha256
- Refactored use of CMake in build.sh
- Added zlib and bzip2 as host requirements
- Refactored commands due to MacOS issues
- Fallback to readlink if macOS missing greadlink (implemented with patch)

```
+ #The line below assures at least some relocation.
+ if [ "$(uname)" == "Darwin" ]; then
+   PACKAGE_BIN_DIR=$(dirname $(greadlink -f $0))
+   # greadlink is only available through 'brew install coreutils'
+   if [ ! -z "$(command -v greadlink)" ]; then
+     PACKAGE_BIN_DIR=$(dirname $(greadlink -f $0))
+   else
+     PACKAGE_BIN_DIR=$(dirname $(readlink -f $0))
+   fi
+ else
+   PACKAGE_BIN_DIR=$(dirname $(readlink -f $0))
+ fi
```

```
17 +   -S source \
18 +   -B build
19
20 + cmake --build build --parallel "${CPU_COUNT}"
21 + cmake --install build
22   ctest
```

HepMC3

Distributed package on conda-forge:

<input type="checkbox"/>	Type	Size	Name	Uploaded	Downloads	Labels
<input type="checkbox"/>	conda	4.1 MB	osx-arm64/hepmc3-3.3.0-hec970e2_0.conda	📅 10 days and 13 hours ago	34	main
<input type="checkbox"/>	conda	4.1 MB	osx-64/hepmc3-3.3.0-hcf7cb5a_0.conda	📅 10 days and 13 hours ago	37	main
<input type="checkbox"/>	conda	4.2 MB	linux-aarch64/hepmc3-3.3.0-hcd748ef_0.conda	📅 10 days and 13 hours ago	23	main
<input type="checkbox"/>	conda	4.3 MB	linux-ppc64le/hepmc3-3.3.0-hdaee891_0.conda	📅 10 days and 13 hours ago	14	main
<input type="checkbox"/>	conda	4.2 MB	linux-64/hepmc3-3.3.0-hd113a74_0.conda	📅 10 days and 13 hours ago	91	main

pyhepmc

- Adding Linux aarch64 and ppc64le builds

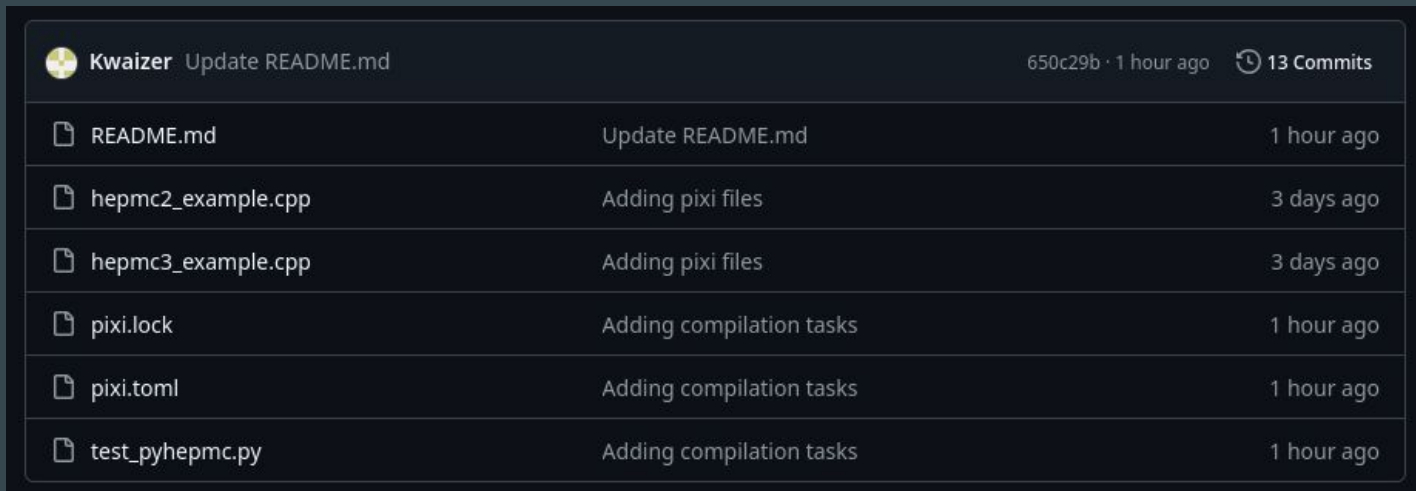
```
4 conda_build:
5   error_overlinking: true
6   conda_forge_output_validation: true
7 + build_platform:
8 +   linux_aarch64: linux_64
9 +   linux_ppc64le: linux_64
10 +   osx_arm64: osx_64
11 + provider:
12 +   linux_aarch64: default
13 +   linux_ppc64le: default
14 + test: native_and_emulated
```



pyhepmc isn't on conda-forge yet with the macOS builds, because they are currently skipped.

Github repository

GitHub repo with examples of how to use these tools on introduced platforms was added to <https://github.com/Kwaizer/Packaging-the-HEP-simulation-stack>



The screenshot shows a table of commit history for a GitHub repository. The repository name is 'Kwaizer' and the commit message is 'Update README.md'. The commit hash is '650c29b' and it was made '1 hour ago'. There are '13 Commits' in total. The table lists the following files and their commit messages:

File	Commit Message	Time
README.md	Update README.md	1 hour ago
hepmc2_example.cpp	Adding pixi files	3 days ago
hepmc3_example.cpp	Adding pixi files	3 days ago
pixi.lock	Adding compilation tasks	1 hour ago
pixi.toml	Adding compilation tasks	1 hour ago
test_pyhepmc.py	Adding compilation tasks	1 hour ago

Thanks for your attention!