

IRIS-HEP Fellowship Proposal:
Packaging the HEP simulation stack on conda-forge:
Package HEP tools for conda-forge

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Project Description

One common toolchain used in high energy physics for simulation is: MadGraph5_aMC@NLO to PYTHIA8 to Delphes. Installing these tools can be challenging at times, especially for new users. Conda-forge allows for distribution of arbitrarily complex binaries across multiple platforms through the conda/mamba/micromamba/pixi package management ecosystem. As ROOT has been successfully packaged and distributed on conda-forge along with the PYTHIA8 Python bindings it should be possible to package all the components of the HEP simulation stack and distribute them on conda-forge. However, the interconnected nature of some of these tools requires that multiple dependencies are first packaged and distributed before the full stack can be. This project would attempt to package as many of the dependencies of the broader HEP simulation stack on conda-forge as possible starting with those outlined in the HEP Packaging Coordination list and additionally contribute to the maintenance of the ROOT feedstock on conda-forge.

Project Deliverables

- Pull requests to [staged-recipes](#) to add new feedstocks
- Pull requests to existing feedstocks to add new platforms to the builds
- Project summary documentation

- Pull requests to the conda-forge website to improve documentation and instructions.

Project Timeline

- Weeks 1-2: Familiarize myself with conda, and the tooling that needed to be integrated and what has already been implemented.
- Weeks 3-4: Add multi-platform builds to a [HEP Packaging Coordination](#) project.
- Weeks 5-6: Add the ACTS project to [conda-forge](#).
- Week 7-8: Create an example physics project that uses packages from across conda-forge and HEP Packaging Coordination.
- Weeks 9-10: Contribute to the ROOT feedstock.
- Weeks 11-12: Spend time thoroughly documenting the code and motivation behind the implementation. Create a presentation that explains the converter and demonstrates its practicality and accuracy. Create tutorial material with usage examples.