## 2025 North American Einstein Toolkit Workshop



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## Using Cauchy Characteristic Evolution to obtain accurate waveforms at infinity

Monday 9 June 2025 11:30 (1 hour)

One of the primary applications of numerical relativity is the generation of waveforms to be compared against gravitational-wave data. Such a comparison enables us to understand the systems emitting the gravitational waves. As gravitational-wave observatories improve, it's becoming increasingly important that our waveform templates are sufficiently accurate. There are many factors that go into the accuracy of waveforms, but this talk will focus on the challenge of obtaining waveforms at infinity. While several techniques exist for extrapolating waveforms extracted at finite radius out to infinity, every method introduces potential systematic errors. One method that has proved to be quite promising is Cauchy Characteristic Evolution. This talk will introduce CCE\_Export, a thorn for exporting Einstein Toolkit data into a format readable by SpECTRE's CCE module. I will also highlight the results of using this method including showing the recovery of memory and comparing to other extrapolation methods and waveforms.

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