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## MadJax - differentiable Matrix Elements with JAX

*Tuesday, 30 November 2021 17:00 (20 minutes)*

We introduce the differentiable simulator MadJax, an implementation of the general purpose matrix element generator Madgraph integrated within the Jax differentiable programming framework in Python. Integration is performed during automated matrix element code generation and subsequently enables automatic differentiation through leading order matrix element calculations. Madjax thus facilitates the incorporation of high energy physics domain knowledge, encapsulated in simulation software, into gradient based learning and optimization pipelines. In this paper we present the MadJax framework as well as several example applications enabled uniquely through the capabilities of differentiable simulation.

### Significance

### References

### Speaker time zone

Compatible with Europe

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