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## Rational-function interpolation from p-adic evaluations in scattering amplitude calculations

*Wednesday 13 March 2024 15:50 (20 minutes)*

Computer algebra plays an important role in particle physics calculations. In particular, the calculation and manipulation of large multi-variable polynomials and rational functions are key bottlenecks when calculating multi-loop scattering amplitudes. Recent years have seen the widespread adoption of interpolation techniques to target these bottlenecks. This talk will present new techniques using p-adic numbers to interpolate such rational functions in a compact form. The techniques are demonstrated on large rational functions at the edge of current capabilities, taken from 2-loop 5-point amplitude calculations. The number of required numerical (p-adic) samples is found to be around 25 times smaller than in conventional (finite-field-based) techniques, and the obtained result is 130 times more compact.

### Experiment context, if any

### References

### Significance

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