

PAUL SCHERRER INSTITUT



Particle Theory Seminar

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PSI

“Electroweak corrections to three-jet production at
electron-positron colliders”

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Abstract:

Many precision QCD studies at electron-positron colliders rely on the measurements of the three-jet production cross section and related event-shape observables. Recently, results for the next-to-next-to-leading-order QCD corrections to these observables have become available. Since at this level of precision electroweak effects also become important, we compute the electroweak $\mathcal{O}(\alpha^3\alpha_s)$ corrections to three-jet production and related event-shape observables. We put special emphasis on properly accounting for the experimental event selection and normalisation. The corrections turn out to be at the few-per-cent level for energies between M_Z and 500GeV and the shape of the differential distributions strongly depends on the values of the parameters used in the event selection.