

## Multi-Differential and Unbinned Measurements of Hadronic Event Shapes in $e^+e^-$ Collisions at $\sqrt{s}=91$ GeV from ALEPH Open Data

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First results are presented on the use of a new machine-learning based unfolding technique, OmniFold, applied to archival hadronic  $e^+e^-$  collisions using  $730 \text{ pb}^{-1}$  of data collected at 91 GeV with the ALEPH detector at LEP. With the archived data and unfolding procedure, multiple classic hadronic event-shape variables are measured in a fully unbinned and multi-differential manner. Of particular interest, the differential distribution of log one minus thrust is presented and is expected to be helpful for extracting  $\alpha_s$  via a fit to precision QCD calculations. The analysis is accompanied by a public release of the archived data set and the unfolding results, so that users may make their own versions of plots, either with different binning or with different combinations of observables in a multi-differential distribution.

**Authors:** THALER, Jesse (MIT); LEE, Yen-Jie (Massachusetts Institute of Technology); METHODIEV, Eric (Massachusetts Institute of Technology); KOMISKE, Patrick (Massachusetts Institute of Technology); BADEA, Anthony (Harvard University (US)); BATY, Austin Alan (Rice University (US)); Dr MCGINN, Christopher (University of Colorado, Boulder)

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