

Statistical uncertainty derivation in probabilistic classification with DSEA+

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The Dortmund Spectrum Estimation Algorithm (DSEA+) is a novel approach to unfolding by translating deconvolution tasks into multinomial classification problems, which enables the use of readily available tools. The algorithm is employable with several prebuilt classification models, making it advantageous to other methods due to its generality, simplicity, and broadness. DSEA+, primarily developed for the purpose of reconstructing energy spectra in the field of Cherenkov astronomy, can be therefore applied to other areas of research. The estimation of statistical uncertainties within DSEA mandates a special treatment of the algorithm's iterative nature. Here, we present a full derivation of statistical uncertainties in DSEA+ with probabilistic classification applied to spectral reconstruction.

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