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Modernizing the ATLAS Statistical Analysis: Implementing HistFitter Strategies with pyhf in Supersymmetry search

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This contribution signifies a shift in ATLAS statistical data analysis by implementing traditional fit strategies utilizing the pyhf library, alongside the cabinetry library. Leveraging a toy Supersymmetry search analysis, three fit strategies inspired by the HistFitter framework are implemented. The "background-only fit," "model-dependent signal fit," and "model-independent signal fit" strategies show the adaptability of pyhf, liberating the analysis from dependence on traditional ROOT-based tools. In addition to enhancing clarity regarding the statistical model itself, this implementation signifies a broader shift towards contemporary standards in data analytics.

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