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PyKOALA: A Multi-Instrument Data Reduction Pipeline for IFS Data

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We present PyKOALA, an open-source Python package developed to streamline the reduction of integral field spectroscopy (IFS) data. Initially conceived as a specialist pipeline to complement the outputs of 2dfdr and enhance data reduction for the Kilofibre Optical AAT Lenslet Array (KOALA) Integral Field Unit (IFU), PyKOALA has evolved into a versatile, multi-instrument framework. It now offers a modular and flexible architecture that enables astronomers to tailor their reduction workflows and apply a wide range of corrections across various IFS instruments. PyKOALA provides a unified interface for ingesting data from different IFUs, standardizing core IFS properties to ensure consistent and efficient processing.

The PyKOALA source code is openly available at github.com/pykoala/pykoala and can also be easily installed via pip. The repository includes comprehensive documentation, unit tests, and a continuous integration (CI) workflow. This CI workflow automatically runs tests on each update, including both standard unit tests and more elaborate validation routines implemented as Jupyter notebooks. These features support reproducibility, transparency, and ease of contribution, making PyKOALA a robust and sustainable tool for the IFS community.

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