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agnpy: An open-source python package modelling the radiative processes of jetted active galactic nuclei

In recent years, jetted AGN have been increasingly studied in extensive multi-wavelength campaigns, sampling their emission from radio up to very-high-energies gamma rays. The amount of data gathered calls for the modelling effort to be open to a wide number of astrophysicists.

In this contribution we present agnpy, an open-source python package modelling the radiative processes of relativistic particles accelerated in the jets of AGN. The package includes classes describing the galaxy components responsible for line and thermal emission and it calculates the absorption due to gamma-gamma pair production on several photon fields. agnpy is thoroughly validated: we present comparisons of its results against the literature and against other open-source software. Being developed within the modern python scientific ecosystem, the package can be easily interfaced with other tools such as Gammapy to perform statistical analyses. We comment on the effort to introduce hadronic models in our software, so far considering only leptonic radiative processes.

Producing open-source modelling tools adopting modern good software practices helps us address the issues of accessibility and reproducibility inherent to the classical closed-source approach employed for physical interpretation.

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