

## Bjet\_MCMC: A new tool to automatically fit the broadband SEDs of blazars

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Multiwavelength observations are now the norm for studying blazars' various states of activity, classifying them, and determining possible underlying physical processes driving their emission. Broadband emission models became unavoidable tools for testing emission scenarios and setting values to physical quantities such as the magnetic field strength, Doppler factor, or shape of the particle distribution of the emission zone(s). We announce here the first public release of a new tool, Bjet\_MCMC, that can automatically fit broadband spectral energy distributions (SEDs) of blazars. The complete code is available on GitHub and allows testing leptonic synchrotron self-Compton models (SSC), with or without external inverse-Compton processes from the thermal environment of supermassive black holes (accretion disk and broad line region). The code is designed to be user-friendly and computationally efficient. It contains a core written in C++ and a fully parallelized SED fitting method. The original multi-SSC zones model of Bjet is also available on GitHub but is not included in the MCMC fitting process at the moment. We present the features, performance, and results of Bjet\_MCMC, as well as user advice.

38th International Cosmic Ray Conference (ICRC2023)  
26 July - 3 August, 2023  
Nagoya, Japan



<sup>1</sup>Now at Starry Sky North (<https://starryskiesnorth.org/>)

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Bjet\_MCMC is publicly available on GitHub<sup>1</sup> and licensed under a BSD-3-Clause License.<sup>2</sup> A paper describing Bjet\_MCMC has been recently submitted to the Astrophysical Journal (ApJ). This preliminary version is already available through ArXiv<sup>3</sup> and should be cited by users of Bjet\_MCMC until the ApJ publication. We highlight that the model is still having frequent updates, and some information mentioned in this paper may be quickly outdated. The most updated version and information are the ones available on GitHub.

## Acknowledgments

We thank David Williams for his advice through the multiple years of development of Bjet\_MCMC. We thank the PHE team members of the LUTH (Paris Observatory) that actively contributed to the early developments of Bjet. We are grateful to the multiple preliminary users of Bjet\_MCMC that provided feedback to improve the code. This work was made possible thanks to the NSF support under grant PHY-2011420.

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<sup>1</sup>[https://github.com/Ohervet/Bjet\\_MCMC](https://github.com/Ohervet/Bjet_MCMC)

<sup>2</sup><https://opensource.org/licenses/bsd-3-clause/>

<sup>3</sup>It is not available yet but we will add a citation before the August 10 ICRC proceeding deadline