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Accretion disk and wind emission in 3C 47, a jetted quasar with double-peaked broad emission lines

Shimeles Terefe Mengistue[1], Ascensión del Olmo[2], Paola Marziani[3], Mirjana Pović[1,2,4], Jaime Perea[2] and Alice Deconto-Machado[2]

[1]Space Science and Geospatial Institute (SSGI), Ethiopia
[2]Instituto de Astrofísica de Andalucía (IAA-CSIC), Spain
[3]Instituto Nazionale de Astrofisica (INAF), Italy
[4]Physics Department, Faculty of Science, Mbarara University of Science and Technology, Uganda

Abstract

This work presents new simultaneous optical and near-UV spectroscopic observations of the radio-loud jetted quasar 3C 47, at redshift 0.4248. The spectra show strong blue and red peaks, typical indicators of double-peaked emitters, and a strong redward asymmetry in the broad Balmer lines (Hβ and Hα) as well as the near-UV MgIIλ2800Å line. Our study provides, for the first time in this object, direct observational evidence for a relativistic Keplerian accretion disk (AD) model as successfully explanation of the double-peaked profiles observed in low-ionization broad Balmer lines and in the MgIIλ2800Å line. The AD model fit was carried out by using Bayesian methods for each of the three spectral regions, MgIIλ2800Å, Hβ and Hα. In addition, we also present and interpret the profile of the UV lines of the λ1900Å blend, dominated by CIII]λ1909Å, and the high ionization line CIVλ1549Å, from the HST-FOS archive. The UV broad lines are also well modeled by the contribution of the AD, but required fairly symmetric additional components interpreted as due to a failed wind between the outer radius of the AD and the innermost part of the narrow line region. Our analysis favors the AD model over alternatives involving a double broad-line region associated with a binary black hole.

My poster in zenodo.org can be found here