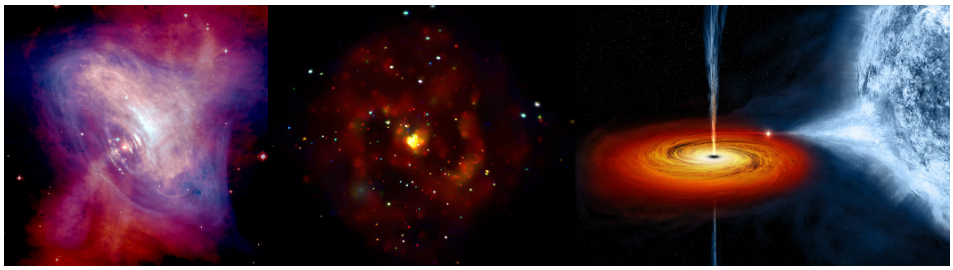

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What decides the characteristic emission of blazars?

Tuesday, April 4, 2023 10:25 AM (15 minutes)

The radiative loss interpretation for the broken power-law spectra of blazars is often questioned since the difference between the indices does not support this inference. MKN 421 is one of the extensively studied high energy peaked blazars with its synchrotron component peaking at soft X-ray energies. The X-ray spectra, therefore, exhibits significant curvature and the spectrum is well described by a log parabola or a smooth broken power-law. Using a smooth broken power-law spectral fit, we show that the spectral indices before and after the characteristic photon energy are strongly anti-correlated which strongly refutes the radiative loss interpretation of spectral break. Further, the spectral curvature measured at the characteristic photon energy indicates an anti-correlation with the low energy spectral index while the high energy spectral index shows a positive correlation. These findings further question the validity of the radiative loss interpretation of the characteristic photon energy. We also approach to find alternative scenarios for the X-ray spectral curvature by considering the electron distribution accelerated under shock process.

Presentation Type

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