Implications for the structure of the relativistic jet from multiwavelength observations of NGC 6251

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NGC 6251 is a luminous radio galaxy ~104 Mpc away that was detected significantly with the Fermi Gamma-ray Space Telescope, and before that with EGRET (onboard the Compton Gamma-ray Observatory). Different observational constraints favor a nuclear origin for the gamma-ray emission. Here we present a study of the spectral energy distribution (SED) of the core of NGC 6251, and give results of modeling in the one-zone synchrotron/SSC framework. The SSC model provides a good description of the radio to gamma-ray emission but, as for other misaligned sources, predicts a lower Lorentz factor (\Gamma~2.4) than typically found when modeling blazars. If the blazar unification scenario is correct, this seems to point to the presence of at least two emitting regions in these objects, one with a higher and one with a lower Lorentz factor. The solution of a structured jet, with a fast moving spine surrounded by a slow layer, is explored and the consequences of the two models for the jet energetics and evolution are discussed.

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