Model for the X-ray Emission in the Jets and Hot Spots of Radio Galaxies

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Abstract

If radio galaxies are misaligned blazars, then they are sources of collimated high-energy gamma radiation from the inner jet. Gamma rays with energies $\gtrsim$ 100 TeV will be attenuated by the microwave background and surrounding radiation fields, causing high-energy pairs to be injected far from the central engine. Photomeson production in the inner jet will also produce a highly collimated beam of energetic neutrons that will transport energy far from the central source. High-energy pairs are formed through $\gamma\gamma$ attenuation, and beam instabilities of neutron-decay protons will generate plasma waves that will accelerate electrons. The energetic leptons will produce X-ray synchrotron radiation that could account for the emission detected from sources such as Pictor A and Cygnus A with the *Chandra X-ray Observatory*.

CATEGORY: ACTIVE GALAXIES AND QUASARS