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Ettore Bronzini: Investigating the high-energy emission in the gamma-ray emitting CSO TXS1146+596

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Some of the most intriguing questions about the physics and the evolution of radio galaxies are related to the early stages of their life. The so-called Compacts Symmetric Objects (CSOs), defined to be those with radio lobe on both sides of an active nucleus and an overall size less than ~1 kpc, are thought to represent the first stage in the evolutionary path of radio galaxies. CSOs are considered a perfect test bench to study the accretion and ejection processes in the early-born radio galaxies and to investigate the interaction between the expanding radio source and the host galaxy. Unveiling the nature of X-ray emission is fundamental to constrain the physical parameters of these sources (i.e. accretion and ejection power), hence to predict their evolution. Moreover, X-rays are important to understand how these sources release energy in the surrounding medium, so to study the feedback between the central source and its host galaxy. Recent gamma-ray detection of a handful of young radio sources has provided the smoking gun of a non-thermal high-energy component, which can help in establishing the origin for the X-ray emission (X-rays from accretion disk or expanding radio jets). Here we present our broad-band X-ray results and multi-wavelength study of 1146+596, a gamma-ray emitter CSO. Starting from the analysis of Chandra and new proprietary Nustar data, we present the first SED model of 1146+596 to explain its broad-band emission from radio to gamma-rays.