

Flux density measurements of a complete sample of faint blazars

Franco Mantovani, Marco Bondi, Karl-Heinz Mack

(Submitted on 27 Jul 2011)

We performed observations with the Effelsberg 100-m radio telescope to measure flux densities and polarised emission of sources selected from the "Deep X-ray Radio Blazar Survey" (DXRBS) to better define their spectral index behaviour in the radio band, with the aim to construct a homogeneous sample of blazars. Sources were observed at four different frequencies with the Effelsberg 100-m telescope. We complemented these measurements with flux density data at 1.4GHz derived from the NRAO VLA Sky Survey. The spectral indices of a sample of faint blazars were computed making use of almost simultaneous measurements. Sixty-six percent of the sources can be classified as "bona fide" blazars. Seven objects show a clearly inverted spectral index. Seventeen sources previously classified as flat spectrum radio quasars (FSRQs) are actually steep spectrum radio quasars (SSRQs). The flux densities obtained with the Effelsberg 100-m telescope at 5GHz are compared with the flux densities listed in the Green Bank GB6 survey and in the Parkes-MIT-NRAO PMN catalogue. About 43% of the sources in our sample exhibit flux density variations on temporal scales of 19 or 22 years. We confirm that 75 out of 103 sources of the DXRBS are indeed FSRQs. Twenty-seven sources show a spectral index steeper than -0.5 and should be classified as SSRQs. Polarised emission was detected for 36 sources at 4.85GHz. The median value of the percentage of polarised emission is $(5.8 \pm 0.9)\%$. Five sources show rotation measure (RM) values $>200 \text{ rad m}^{-2}$.

Comments: Accepted for publication in Astronomy and Astrophysics

Subjects: **Cosmology and Extragalactic Astrophysics (astro-ph.CO)**

DOI: [10.1051/0004-6361/201117328](https://doi.org/10.1051/0004-6361/201117328)

Cite as: [arXiv:1107.5443](https://arxiv.org/abs/1107.5443) [astro-ph.CO]

(or [arXiv:1107.5443v1](https://arxiv.org/abs/1107.5443v1) [astro-ph.CO] for this version)

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[v1] Wed, 27 Jul 2011 11:29:52 GMT (294kb)

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