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37 GHz observations of narrow-line Seyfert 1 galaxies

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Abstract

© ESO 2017. Observations performed at Metsähovi Radio Observatory at 37 GHz are presented for a sample of 78 radio-loud and radio-quiet narrow-line Seyfert 1 (NLS1) galaxies, together with additional lower and higher frequency radio data from RATAN-600, Owens Valley Radio Observatory, and the Planck satellite. Most of the data have been gathered between February 2012 and April 2015 but for some sources even longer light curves exist. The detection rate at 37 GHz is around 19%, which is comparable to other populations of active galactic nuclei presumed to be faint at radio frequencies, such as BL Lac objects. Variability and spectral indices are determined for sources with enough detections. Based on the radio data, many NLS1 galaxies show a blazar-like radio spectra exhibiting significant variability. The spectra at a given time are often inverted or convex. The source of the high-frequency radio emission in NLS1 galaxies, detected at 37 GHz, is most probably a relativistic jet rather than star formation. Jets in NLS1 galaxies are therefore expected to be a much more common phenomenon than earlier assumed.

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Keywords

Galaxies: active, Galaxies: Seyfert

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