**LETTER**

**IDV observations & study of the quasar 0917+624**

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Abstract We carried out intra-day variability (IDV) observations from August 2005 to January 2010 with the Urumqi 25 m radio telescope for a dozen IDV sources including the quasar 0917+624. This target exhibited pronounced centimeter-band, intra-day variability during the 1980s–1990s, but its strong IDV phase ceased in 2000. The source showed no IDV in the majority of the Urumqi observing sessions, although weak IDV activity was detected in some. Multifrequency UMRAO data for 0917+624 show that the spectral index is steeper during the weak and non-IDV phases than during the strong IDV phase, supporting the idea that the size of the scintillating component may be enlarged in the weak/non IDV phases.

Keywords Quasars: individual: 0917+624 · Radio continuum: galaxies · Galaxies: jets · ISM: structure · Scattering

1 Introduction

It is reported in the literature that ~25 % to ~50 % of flat-spectrum radio sources (Quirrenbach et al. 1992; Lovell et al. 2008) and ~60 % of bright Fermi blazars (Liu et al. 2011, 2012a) exhibit radio-band intra-day variability (IDV). The quasar 0917+624 (OK630, z = 1.453) was one of the most pronounced centimeter-band IDV sources during the 1980s–1990s (Heeschen et al. 1987). However, its strong IDV activity stopped from 2000 to 2001 (Fuhrmann et al. 2002). The data during the strong IDV phase before 2000 have been analyzed assuming an ISS model of our galaxy, and the results are consistent with an ISS origin for the IDV (Jauncey and Macquart 2001; Rickett et al. 2001). However, source-intrinsic variations cannot be completely ruled out, because of the remarkable polarization variations detected in the IDV of 0917+624 (Quirrenbach et al. 1989; Qian et al. 1991); the polarization variations were explained with some success using an ISS model by Rickett et al. (1995) (where the source has more than one polarized component). To investigate IDV in recent years, we carried out IDV observations for a dozen sources at Urumqi and present results for 0917+624 in this research note.

2 Observations and results

The quasar 0917+624 was observed at Urumqi from August 2005 to January 2010 at 4.8 GHz, with approximately monthly observations of ~4 days per session. The observing strategy and detailed calibration method is described in Liu et al. (2012b). The relative uncertainty of the calibrated total flux density variability is around 0.5 %, in normal weather conditions.