

Multiwavelength campaign of the gamma-ray flaring source PKS 2052-47

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Summary: Preliminary results of the multiwavelength campaign of the gamma-flaring flat-spectrum radio quasar PKS 2052-474 are presented.

Abstract

The flat-spectrum radio quasar PKS 2052-47 was reported to have increasing optical flux from July to August (M. Hauser et al. 2009, ATel #2158). On August 9, LAT detected a flare from the source, which reached its active phase in the following two months (C. S. Chang et al. 2009, ATel #2160). To further investigate the physics and emission mechanisms during the flaring state of PKS 2052-47, we arranged a multiwavelength campaign from radio to gamma-ray to study its spectral energy distribution (SED). Here we present the preliminary result of this multiwavelength campaign.

PKS 2052-47

Our source is a flat-spectrum radio quasar with a redshift of 1.489. Earlier X-ray observations (Fig. 1, Marshall, 2005, ApJ 156,13) by Chandra (color) and ATCA (contour) showed that the source has a two-sided jet with no extended emission. VLBI observations by TANAMI (Fig. 2) and VLBI Calibrator Survey showed that PKS 2052-47 has a compact-core structure. Following its flaring state, we will investigate the correlations of variability between different wavebands, and to understand the nature of this source.

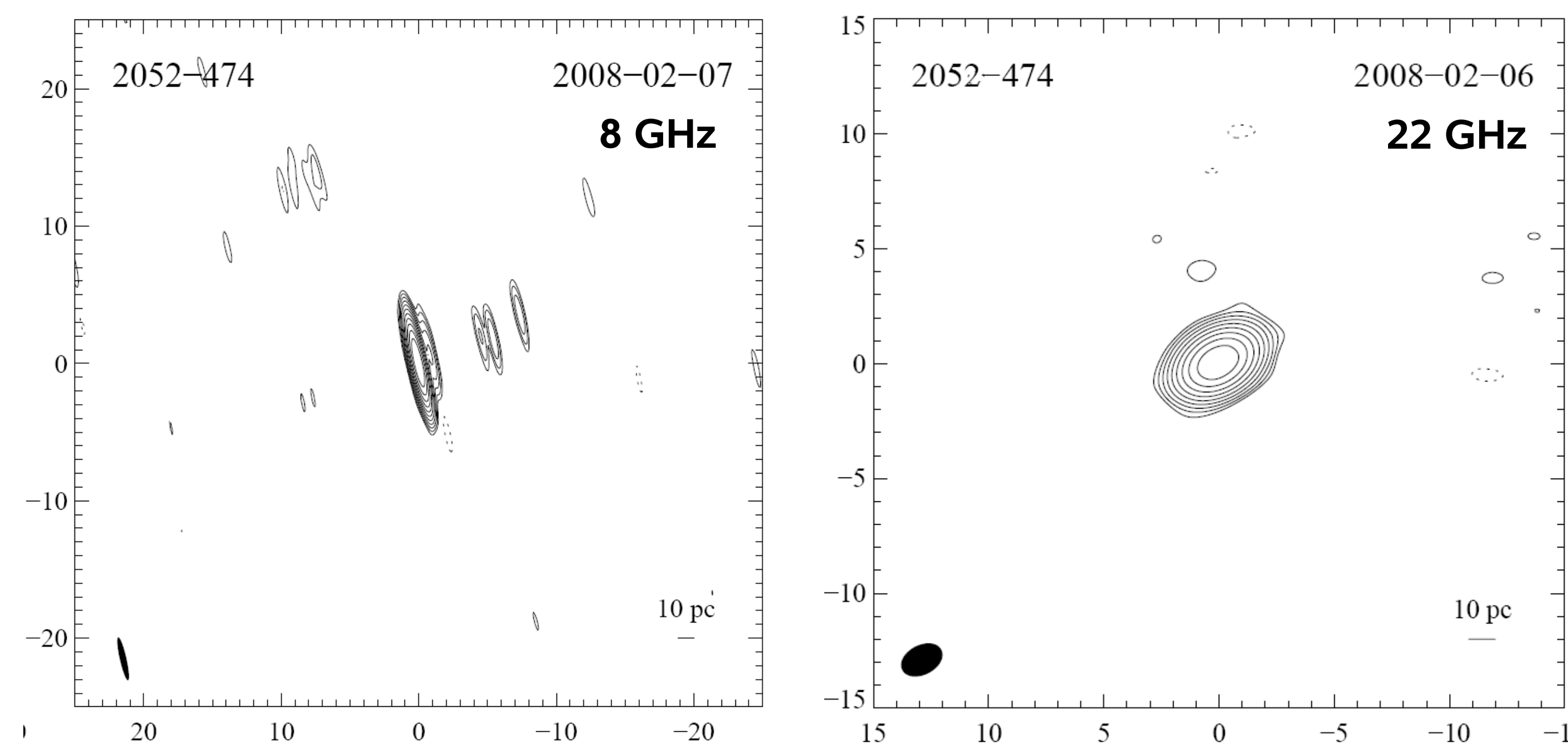
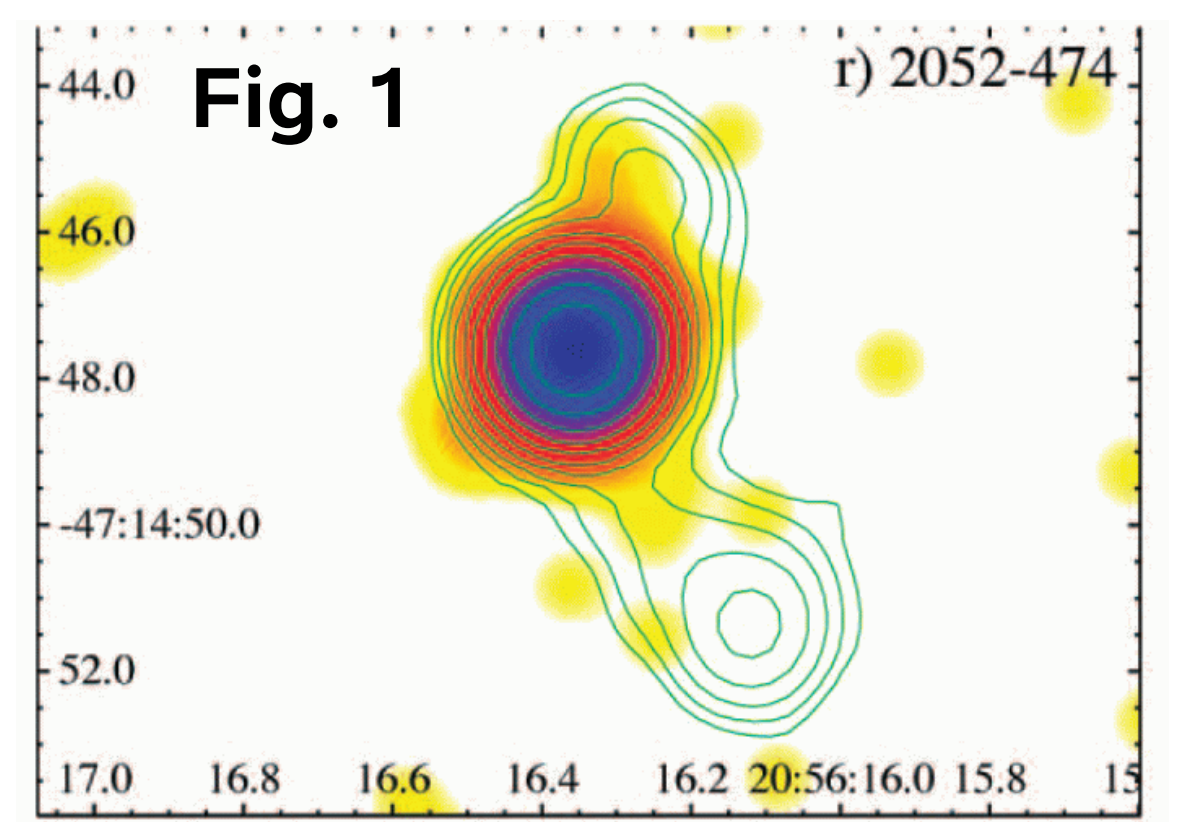


Figure 2 TANAMI VLBI images of PKS 2052-47 in 2008. The source shows a compact core-jet structure expanding westward.

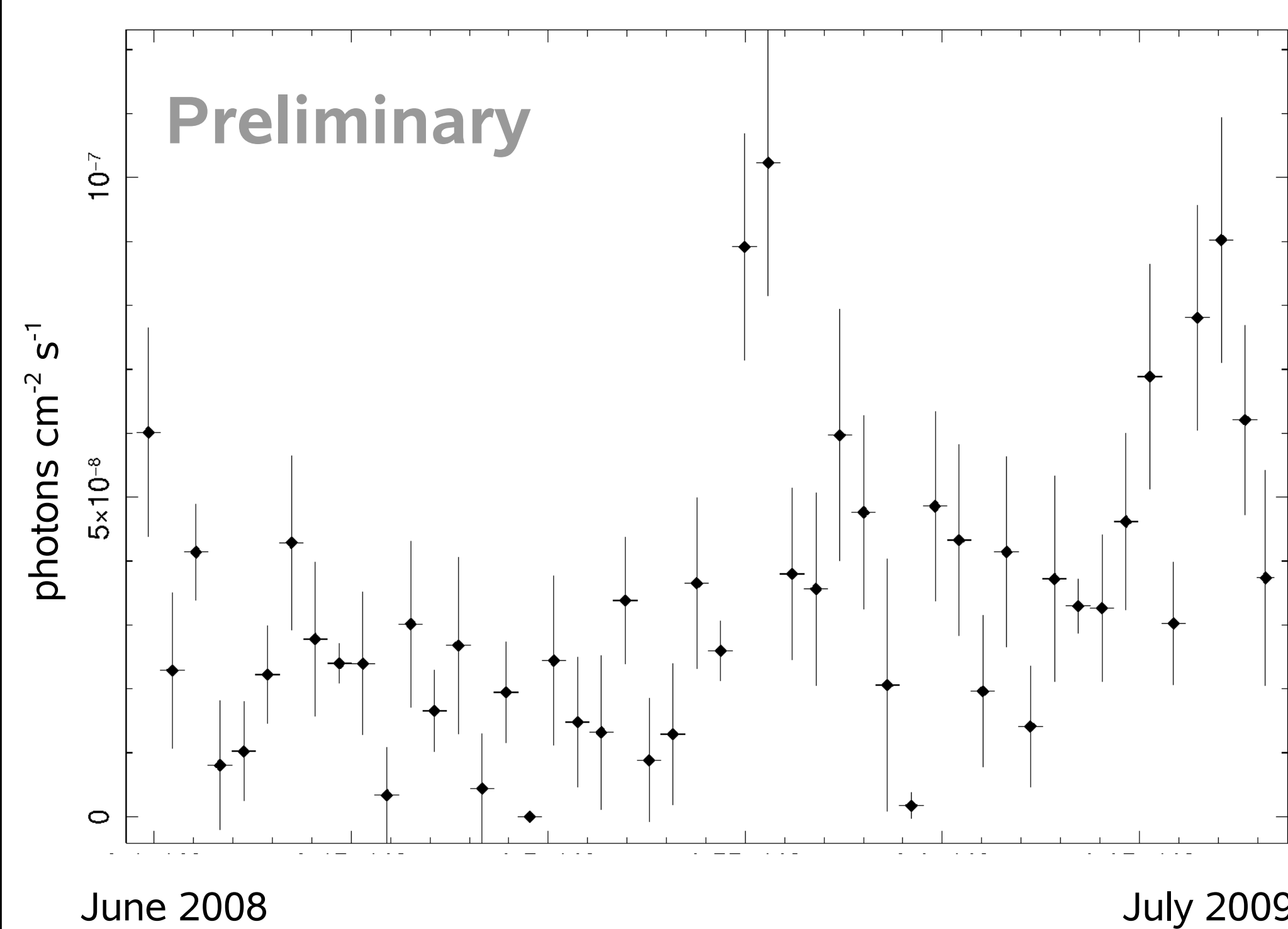


Figure 3

LAT light curve of PKS 2052-47. This plot shows a weekly-binned light curve since Fermi's launch. The flux of the source has risen after July 2009.

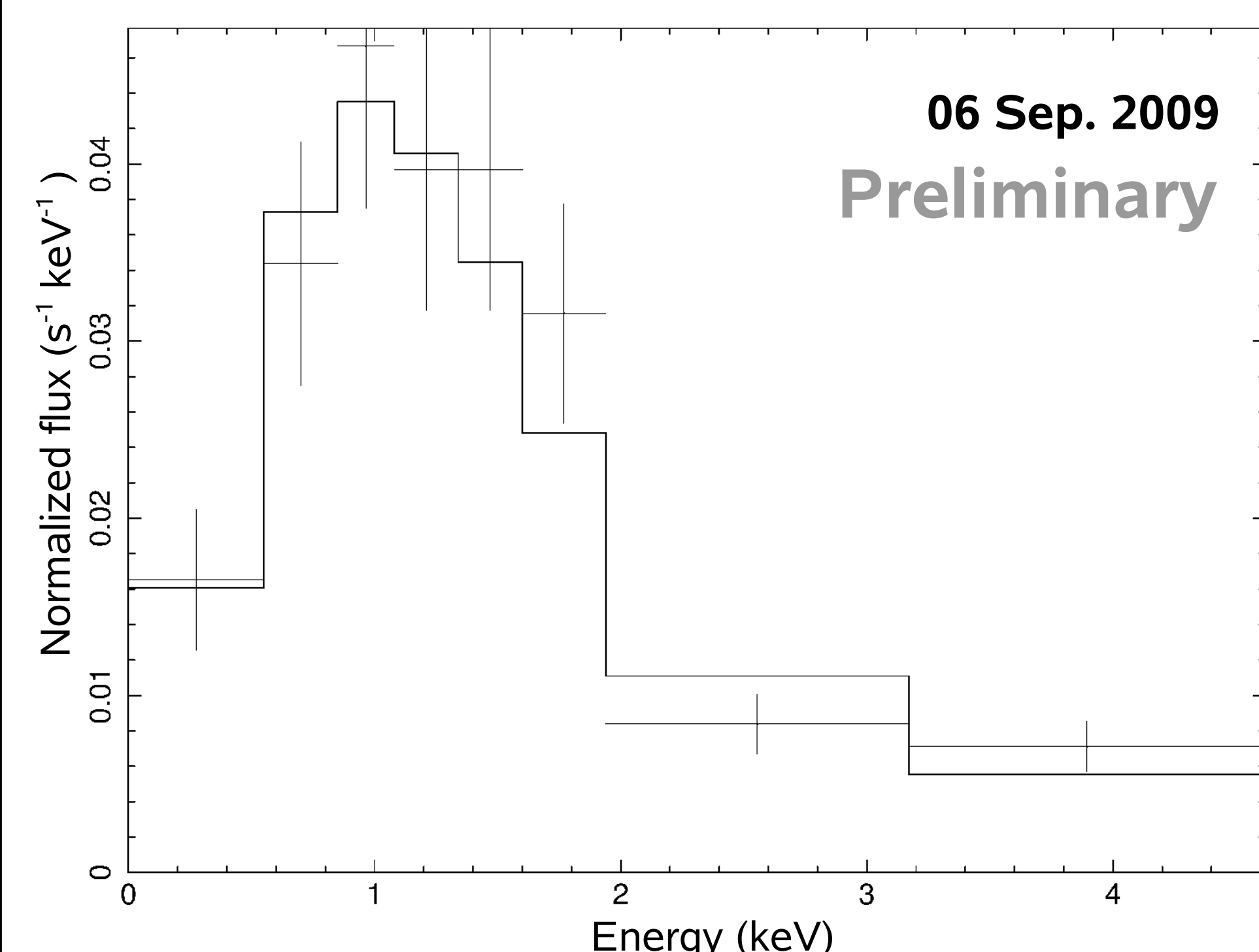


Figure 4

Swift X-ray spectrum (0.3 – 10 keV) of PKS 2052-47, fitted by a power-law function.

Observation log Participating facilities include: southern VLBI observations by the TANAMI team, radio flux monitoring with the Ceduna-Hobart observatories, sub-millimeter observations with the APEX telescope, Swift UVOT/XRT/BAT, and Fermi LAT monitoring.

Facility	Band	Obs. date
Ceduna-Hobart	6.6 GHz	2009 September
TANAMI ^a	8/22 GHz	2009.09.05/06
APEX ^b	345 GHz	2009.09.02/06
Swift UVOT	2000 – 3500 Å	2009.09.04-08
Swift XRT ^c	0.3 – 10 keV	2009.09.04-08
Fermi LAT ^d	100 MeV – 300 GeV	2008 June ~

^a Figure 2, ^b Provided by F-GAMM team, ^c Figure 4, ^d Figure 3

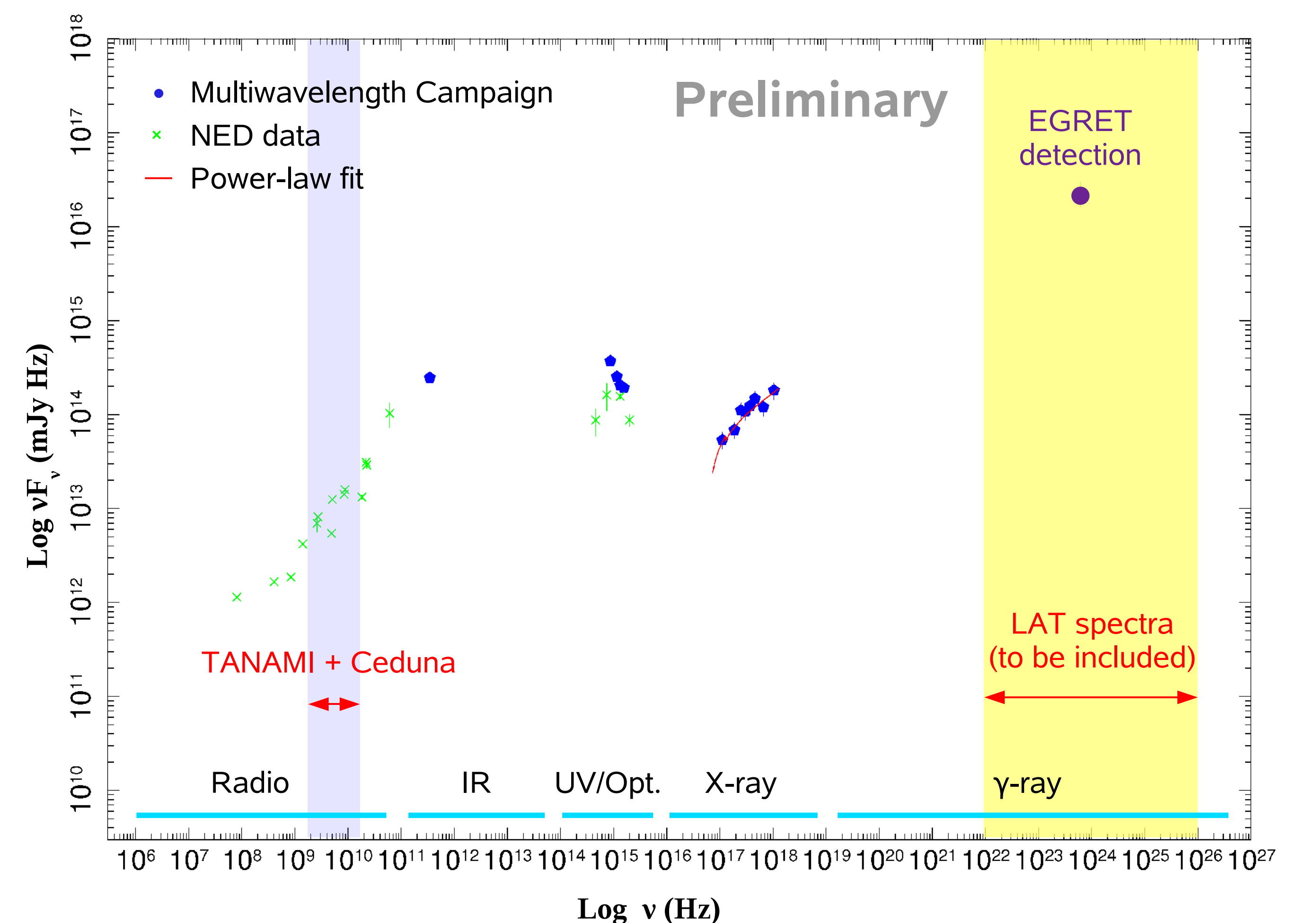


Figure 5 The broadband SED plot of PKS 2052-47. The yellow region indicates the LAT range during the flaring state of the source; the blue area marks the frequency range of TANAMI and Ceduna-Hobart observations being processed presently; all data will be included in the broadband SED fitting to be performed.

Outlook and Summary

Preliminary results of the multiwavelength campaign on PKS 2052-47. The data of TANAMI and Ceduna-Hobart observations will arrive after data correlation. The SED broadband fit from radio to gamma-ray is in progress, which will allow us to understand the underlying physics in this region.

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