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J/A+A/579/A113 BR light curves of GJ1214b (Nascimbeni+, 2015)

Large Binocular Telescope view of the atmosphere of GJ 1214b.

Nascimbeni V., Mallonn M., Scandariato G., Pagano I., Piotto G., Micela G.,
Messina S., Leto G., Strassmeier K.G., Bisogni S., Speziali R.
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[=2015A&A...579A.113N](#)

ADC_Keywords: Stars, double and multiple ; Planets ; Photometry, UVRI

Keywords: techniques: photometric - planetary systems -
stars: individual: GJ1214

Abstract:

The atmospheric composition and vertical structure of the super-Earth GJ 1214b has been a subject of debate since its discovery in 2009. Recent studies have indicated that high-altitude clouds might mask the lower layers. However, some data points that were gathered at different times and facilities do not fit this picture, probably because of a combination of stellar activity and systematic errors. We observed two transits of GJ 1214b with the Large Binocular Camera, the dual-channel camera at the Large Binocular Telescope. For the first time, we simultaneously measured the relative planetary radius $k=R_p/R_*$ at blue and red optical wavelengths (B+R), thus constraining the Rayleigh scattering on GJ 1214b after correcting for stellar activity effects. To the same purpose, a long-term photometric follow-up of the host star was carried out with WiFSIP at STELLA, revealing a rotational period that is significantly longer than previously reported. Our new unbiased estimates of k yield a flat transmission spectrum extending to shorter wavelengths, thus confirming the cloudy atmosphere scenario for GJ 1214b.

Description:

We observed two complete transits of GJ1214b during the nights of March 29 and May 17, 2012 with the LBC camera mounted at the double 8.4m Large Binocular Telescope (LBT). We mounted a Bessel B and Bessel R filter on the blue and red channel, respectively.

Objects:

```
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RA   (2000)  DE   Designation(s)   (Per)
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17 15 18.9  +04 57 50  GJ1214 = LHS 3275 (1.5804046)
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```

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
b1.dat	37	185	LBT/LBC Bessel B light curve of GJ1214b (2012/03/29)
r1.dat	37	207	LBT/LBC Bessel R light curve of GJ1214b (2012/03/29)
b2.dat	37	64	LBT/LBC Bessel B light curve of GJ1214b (2012/05/17)
r2.dat	37	123	LBT/LBC Bessel R light curve of GJ1214b (2012/05/17)

See also:

[J/A+A/559/A32](#) : Light curves of GJ3470b (Nascimbeni+, 2013)

Byte-by-byte Description of file: [b1.dat](#) [b2.dat](#) [r1.dat](#) [r2.dat](#)

Bytes	Format	Units	Label	Explanations
1- 17	F17.9	d	BJD	Barycentric Julian Day (TDB-based)
20- 27	F8.5	mag	mag	Normalized magnitude
31- 37	F7.5	mag	e_mag	Error on magnitude

Acknowledgements:

Valerio Nascimbeni, [valerio.nascimbeni\(at\)unipd.it](mailto:valerio.nascimbeni@unipd.it)

References:

Nascimbeni et al., Paper I [2013A&A...559A..32N](#), Cat. [J/A+A/559/A32](#)

(End) Valerio Nascimbeni [INAF-OAPD, Italy], Patricia Vannier [CDS] 28-Aug-2015

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