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J/A+A/584/A72 A transiting rocky planet at 6.5pc from the Sun (Motalebi+ 2015)

The HARPS-N Rocky Planet Search.I. A transiting rocky planet in a 4 planet system at 6.5 pc from the Sun.

Motalebi F., Udry S., Gillon M., Lovis C., Segransan D., Buchhave L.A., Demory B.O., Malavolta L., Dressing C.D., Sasselov D., Rice K., Charbonneau D., Collier Cameron A., Latham D., Molinari E., Pepe F., Affer L., Bonomo A.S., Cosentino R., Dumusque X., Figueira P., Fiorenzano A.F.M., Gettel S., Harutyunyan A., Haywood R.D., Johnson J., Lopez E., Lopez-Morales M., Mayor M., Micela G., Mortier A., Nascimbene V., Philips D., Piotto G., Pollacco D., Queloz D., Sozzetti A., Vanderburg A., Watson C.A.

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=[2015A&A...584A..72M](#) (SIMBAD/NED BibCode)

ADC_Keywords: Stars, double and multiple ; Planets ; Radial velocities

Keywords: techniques: radial velocities - techniques: photometric - stars: individual: HD 219134 - binaries: eclipsing - instrumentation: spectrographs

Abstract:

We know now from radial velocity surveys and transit space missions that planets only a few times more massive than our Earth are frequent around solar-type stars. Fundamental questions about their formation history, physical properties, internal structure, and atmosphere composition are, however, still to be solved. We present here the detection of a system of four low-mass planets around the bright ($V=5.5$) and close-by (6.5pc) star HD 219134. This is the first result of the Rocky Planet Search programme with HARPS-N on the Telescopio Nazionale Galileo in La Palma. The inner planet orbits the star in 3.0935 ± 0.0003 -days, on a quasi-circular orbit with a semi-major axis of 0.0382 ± 0.0003 AU. Spitzer observations allowed us to detect the transit of the planet in front of the star making HD 219134 b the nearest known transiting planet to date.

Description:

We obtained 98 spectra of HD219134 using the HARPS-N spectrograph. Our RV data are provided online. spitzer.dat contains the photometric time-series presented in the paper for HD219134 and gathered by the IRAC instrument aboard the Spitzer telescope in its channel 2 (4.5 microns) on 2015-04-14.

Objects:

RA	(2000)	DE	Designation(s)
23 13 16.98	+57 10 06.1		HD 219134 = HR 8832

File Summary:

FileName	Lrecl	Records	Explanations
ReadMe	80	.	This file
table6.dat	45	97	List of undetected sources. The typical detection limit (3 σ level) is 3Jy
spitzer.dat	68	9396	Spitzer channel 2 (4.5 microns) photometry

Byte-by-byte Description of file: [table6.dat](#)

Bytes	Format	Units	Label	Explanations
1- 12	F12.6	d	BJD	Barycentric Julian Date (BJD-2400000)
14- 22	F9.5	km/s	RV	Radial velocity
24- 30	F7.5	km/s	e_RV	Uncertainty in RV
32- 38	F7.4	[=]	logR'HK	The logR'HK chromospheric activity value
40- 45	F6.4	[=]	e_logR'HK	Uncertainty in logR'HK

Byte-by-byte Description of file: [spitzer.dat](#)

Bytes	Format	Units	Label	Explanations
1- 14	F14.6	d	BJD	Barycentric Julian Data (UTC), middle of the 64 subarray exposures.
16- 22	F7.5	---	Flux	Normalized flux
24- 30	F7.5	---	e_Flux	Normalized flux error
32- 38	F7.4	pix	Xpos	X position
40- 46	F7.4	pix	Ypos	Y position
48- 54	F7.4	pix	FWHMx	PSF Full-Width at Half-Maximum along X

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(End) Patricia Vannier [CDS] 15-Oct-2015

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