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BAV-Results of observations – transits of exoplanets in 2020

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Abstracts: *91 results of the observation of 68 transit planets are listed, which were obtained by observers of the BAV in 2020.*

All results were obtained in 2020 by photometry of CCD images and the subsequent evaluation of the light curves obtained using the ETD algorithm [1]. All times of mid transit are heliocentric UTC, expressed as Heliocentric Julian Date (HJD). The transit duration is given in minutes and the transit depth in mag. The mean errors are tabulated in columns "+/-".

In those cases in which no values were given for the transit depth or transit duration, these values had to be assumed as given in the evaluation process

Most results listed here have already been sent to the ETD and the project ExoClock [2].

	HJD 24..	+/-	duration	+/-	depth	+/-	Filter	Obs	Rem
CoRoT-18 b	58865.39449	0.00208	131.2	8.2	0.0293	0.0062	Clear	RAT_1	
EPIC-211089792 b	58850.27200	0.00046	130.1	1.7	0.0235	0.0006	Clear	RAT_1	
GJ_436 b	58870.59351	0.00089	64.1	3.7	0.0066	0.0007	R	RAT_1	
GJ_436 b	58923.46610	0.00045	57.0	1.8	0.0081	0.0005	R	RAT_1	
GJ_436 b	58931.40058	0.00066	53.8	2.7	0.0069	0.0004	R	RAT_1	
GJ-1214 b	58985.49362	0.00062	56.1	2.2	0.0168	0.0013	Clear	RAT_1	
HAT-P-3 b	58936.63220	0.00062	130.6	2.4	0.0176	0.0009	R	RAT_1	
HAT-P-3 b	58942.43428	0.00051	120.8	1.9	0.0141	0.0006	R	RAT_1	
HAT-P-4 b	58934.52382	0.00148	246.9	4.6	0.0085	0.0007	R	RAT_1	
HAT-P-8 b	59144.48090	0.00147			0.0114	0.0015	R	RAT_1	
HAT-P-10 b	59159.65599	0.00048	151.7	1.6	0.0235	0.0007	Clear	RAT_1	WASP-11 b
HAT-P-12 b	58933.54130	0.00042	142.1	1.5	0.0261	0.0005	Clear	RAT_1	
HAT-P-12 b	58946.39272	0.00065			0.0242	0.001	Clear	RAT_1	
HAT-P-12 b	58962.46030	0.00032	137.7	1.2	0.0279	0.0004	Clear	RAT_1	
HAT-P-13 b	58865.58612	0.00076	196.6	2.8	0.0124	0.0004	Clear	RAT_1	
HAT-P-13 b	58941.40833	0.00100	195.6	3.7	0.0088	0.0006	R	RAT_1	
HAT-P-14 b	58998.54046	0.00179	130.1	7.9	0.0082	0.0008	I	RAT_1	
HAT-P-19 b	59160.44714	0.00053	155.4	1.8	0.0230	0.0006	Clear	RAT_1	
HAT-P-20 b	58850.46734	0.00045	111.0	1.7	0.0220	0.0006	Clear	RAT_1	
HAT-P-21 b	58976.53583	0.00198	203.2	6.5	0.0104	0.0013	Clear	RAT_1	
HAT-P-22 b	58945.51061	0.00048	170.0	1.7	0.0147	0.0003	R	RAT_1	
HAT-P-28 b	59101.50646	0.00055	187.0	1.9	0.0182	0.0004	Clear	RAT_1	
HAT-P-28 b	59114.53382	0.00052	191.0	1.8	0.0201	0.0004	Clear	RAT_1	
HAT-P-29 b	59106.62968	0.00105			0.0089	0.0005	Clear	RAT_1	
HAT-P-33 b	59172.58924	0.00168			0.0153	0.0015	Clear	RAT_1	

	HJD 24..	+/-	duration	+/-	depth	+/-	Filter	Obs	Rem
HAT-P-36 b	58944.60530	0.00049	130.5	1.8	0.0187	0.0006	Clear	RAT_1	
HAT-P-36 b	58960.53307	0.00056	130.2	2.0	0.0179	0.0006	Clear	RAT_1	
HAT-P-37 b	59161.32483	0.00059	136.9	2.2	0.025	0.0008	Clear	RAT_1	
HAT-P-44 b	58961.54335	0.00059	179.5	2.0	0.0248	0.0007	Clear	RAT_1	
HAT-P-53 b	59158.32643	0.00077	168.5	2.6	0.0168	0.0005	Clear	RAT_1	
HAT-P-54 b	59160.58712	0.00058	103.8	2.5	0.0269	0.0009	Clear	RAT_1	
HAT-P-57 b	58981.52967	0.00066	214.7	2.0	0.0156	0.0005	R	RAT_1	
HD 149026 b	58957.54651	0.00168			0.0050	0.0010	R	RAT_1	
Kelt-3 b	58959.35346	0.00133			0.0119	0.0011	R	RAT_1	
Kelt-17 b	58926.39626	0.00145			0.0090	0.0018	R	RAT_1	
Kelt-23A b	59042.50183	0.00041	135.6	1.5	0.0222	0.0005	R	RAT_1	1)
Kepler-5 b	59061.48025	0.00145	298.0	4.5	0.0117	0.0006	Clear	RAT_1	
Kepler-7 b	59100.39598	0.00173	313.2	5.2	0.0095	0.0007	Clear	RAT_1	
Kepler-412 b	59013.47928	0.00184	165.8	7.0	0.0115	0.0009	Clear	RAT_1	KOI-202 b
Kepler-426 b	59062.52647	0.00131	114.4	4.7	0.0156	0.0016	Clear	RAT_1	KOI-195 b
Kepler-548 b	59023.49301	0.00088	120.2	3.0	0.0184	0.0010	Clear	RAT_1	KOI-421 b
Kepler-854 b	59022.48701	0.00217			0.0192	0.0053	Clear	RAT_1	KOI-1450 b, 1)
Kepler-854 b	59082.53548	0.00154	239.8	6.3	0.0142	0.0007	Clear	RAT_1	KOI-1450 b, 1)
KOI-1227 b	59113.33078	0.00113	142.1	5.4	0.0220	0.0010	Clear	RAT_1	
KPS-1 b	58924.61974	0.00055	99.4	2.2	0.0140	0.0005	Clear	RAT_1	
KPS-1 b	58948.50426	0.00054	99.2	2.2	0.0136	0.0005	Clear	RAT_1	
Qatar-1 b	58923.62787	0.00029	94.0	1.2	0.0262	0.0005	Clear	RAT_1	
Qatar-1 b	58987.53019	0.00033	100.5	1.4	0.0251	0.0006	Clear	RAT_1	
Qatar-1 b	59115.33239	0.00034	98.3	1.4	0.0266	0.0006	Clear	RAT_1	
Qatar-1 b	59159.35388	0.00072			0.0234	0.0022	Clear	RAT_1	
Qatar-3 b	59163.31359	0.00085	193.9	2.7	0.0086	0.0003	Clear	RAT_1	
Qatar-4 b	59105.53563	0.00062	120.9	2.1	0.0262	0.0008	Clear	RAT_1	
TOI-1168.01 b	59101.33829	0.00759	121.6	19.0	0.0151	0.0077	Clear	RAT_1	
TOI-1168.01 b	59116.29707	0.00132	103.5	6.7	0.0091	0.0010	R	RAT_1	
TOI-1371.01 b	59172.23698	0.00124			0.0112	0.0013	R	RAT_1	
TOI-1425.01 b	59103.38537	0.00165	131.6	5.3	0.0070	0.0013	V	RAT_1	1)
TOI-1480.01 b	59067.48831	0.00083	116.6	4.0	0.0089	0.0004	R	RAT_1	
TOI-1516.01 b	59133.35265	0.00038	178.6	1.4	0.0229	0.0003	R	RAT_1	
TOI-1518.01 b	59108.58981	0.00112	107.7	5.2	0.0085	0.0006	I	RAT_1	
TOI-1829.01 b	59115.47637	0.00075	189.9	2.6	0.0260	0.0009	Clear	RAT_1	
TOI-2155.01 b	59161.60120	0.00263	182.5	10.3	0.0038	0.0004	Clear	RAT_1	1)
TrES-1 b	59001.51081	0.00036	153.4	1.3	0.0258	0.0005	Clear	RAT_1	
TrES-2 b	59059.45252	0.00126			0.0127	0.0021	R	RAT_1	
TrES-3 b	58949.57104	0.00027	77.0	1.3	0.0249	0.0005	Clear	RAT_1	
TrES-3 b	58966.55149	0.00028	74.2	1.4	0.0255	0.0006	Clear	RAT_1	
TrES-3 b	59106.31402	0.00033	79.5	1.6	0.0266	0.0007	Clear	RAT_1	
TrES-5 b	59107.36641	0.00035	104.4	1.4	0.0253	0.0006	Clear	RAT_1	
TrES-5 b	59110.33313	0.00041	112.6	1.6	0.0275	0.0006	Clear	RAT_1	
WASP-2 b	58726.40513	0.00260	100.5	10.4	0.0231	0.0035	V	WNZ	
WASP-2 b	59053.54063	0.00030	108.9	1.3	0.0225	0.0005	Clear	RAT_2	
WASP-3 b	59043.50317	0.00050	164.2	1.7	0.0127	0.0003	R	RAT_1	
WASP-10 b	59108.28749	0.00048			0.0345	0.0023	Clear	RAT_1	
WASP-13 b	58940.39637	0.00087	249.4	2.8	0.0119	0.0004	R	RAT_1	
WASP-13 b	58953.45015	0.00113			0.0132	0.0014	R	RAT_1	
WASP-33 b	59158.59230	0.00064			0.0148	0.0010	R	RAT_1	
WASP-52 b	59160.25978	0.00035	111.2	1.4	0.0353	0.0008	Clear	RAT_1	
WASP-57 b	58931.53404	0.00070	125.0	2.4	0.0159	0.0007	Clear	RAT_1	
WASP-60 b	59113.54510	0.00091	205.8	3.0	0.0095	0.0003	Clear	RAT_1	
WASP-69 b	59044.48582	0.00075	122.3	2.9	0.0212	0.0010	R	RAT_1	
WASP-92 b	59060.47863	0.00063	164.9	2.5	0.0177	0.0008	Clear	RAT_1	
WASP-103 b	58946.53955	0.00070	164.8	2.4	0.0178	0.0015	Clear	RAT_1	

	HJD 24..	+/-	duration	+/-	depth	+/-	Filter	Obs	Rem
WASP-104 b	58923.36247	0.00063	105.4	2.5	0.0164	0.0006	Clear	RAT_1	
XO-1 b	58956.52198	0.00049	168.9	1.6	0.0201	0.0005	Clear	RAT_1	
XO-2 b	58869.37743	0.00096	155.6	2.9	0.0139	0.0011	Clear	RAT_1	
XO-2 b	58937.38864	0.00038	160.2	1.2	0.0144	0.0003	Clear	RAT_1	
XO-2 b	58950.46688	0.00056	162.3	1.8	0.0133	0.0004	R	RAT_1	
XO-3 b	58924.38294	0.00128	178.9	4.5	0.0089	0.0005	R	RAT_1	
XO-6 b	58870.29665	0.00088	186.0	3.1	0.0158	0.0005	R	RAT_1	
XO-6 b	59175.26182	0.00408	177.8	12.2	0.0185	0.0045	V	WNZ	
XO-6 b	58930.53877	0.00100	179.4	3.8	0.0181	0.0007	R	RAT_1	
XO-7 b	58991.53489	0.00174	176.0	5.3	0.0109	0.0012	Clear	RAT_1	1)

Remarks

1) not listed in ETD ; Result of the data analysis is shown in appendix

Observers and instruments

RAT_1 Raetz, Manfred Herges-Hallenberg;
SCT 280/1790 + Moravian Instruments G2-1600

RAT_2 Raetz, Manfred Herges-Hallenberg;
Cass. 600/4800 + Moravian Instruments G2-1600 (Volkssternwarte Kirchheim)

WNZ Wenzel, Bernhard Vienna;
NWT 200 / 900 mm, Canon 200D

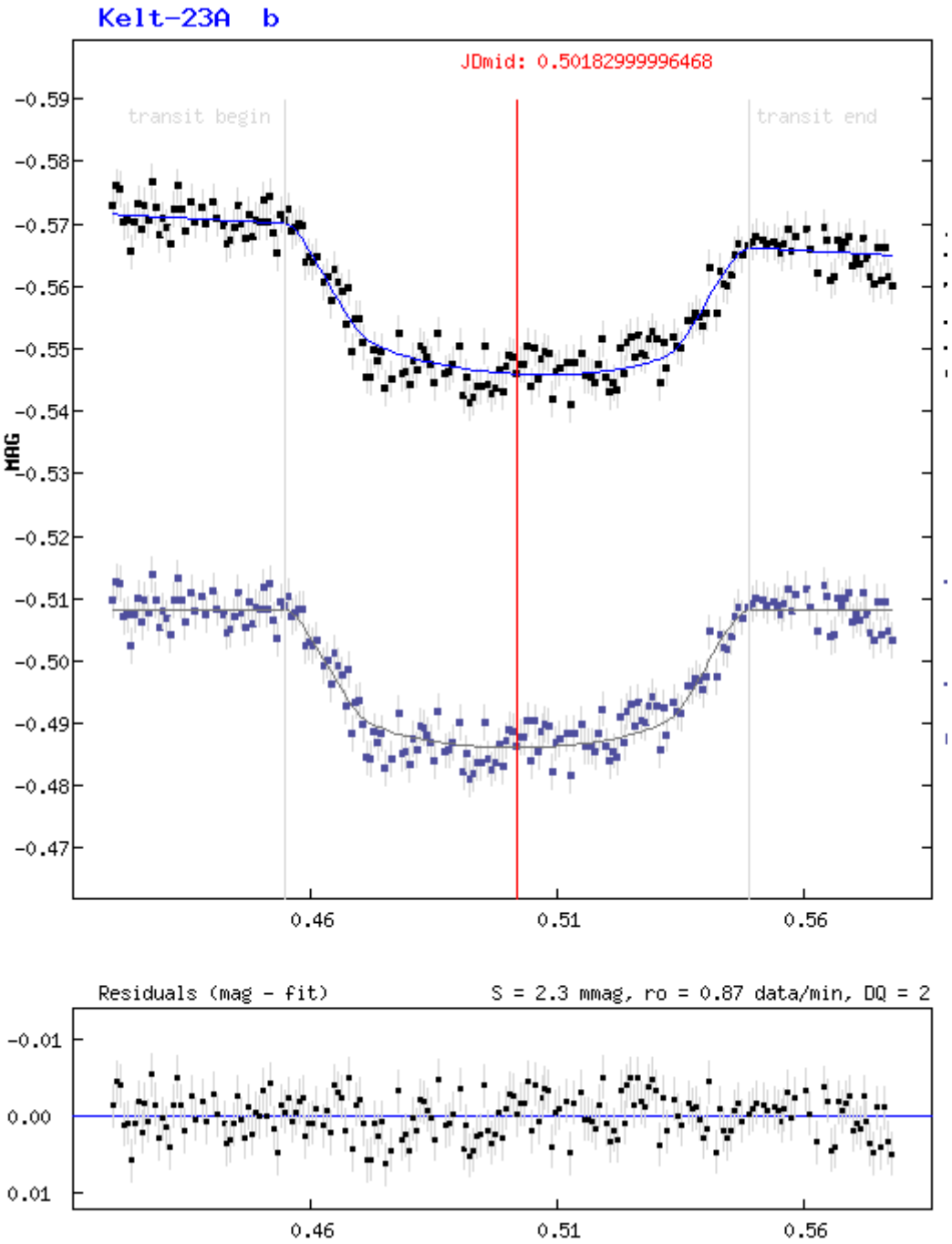
References

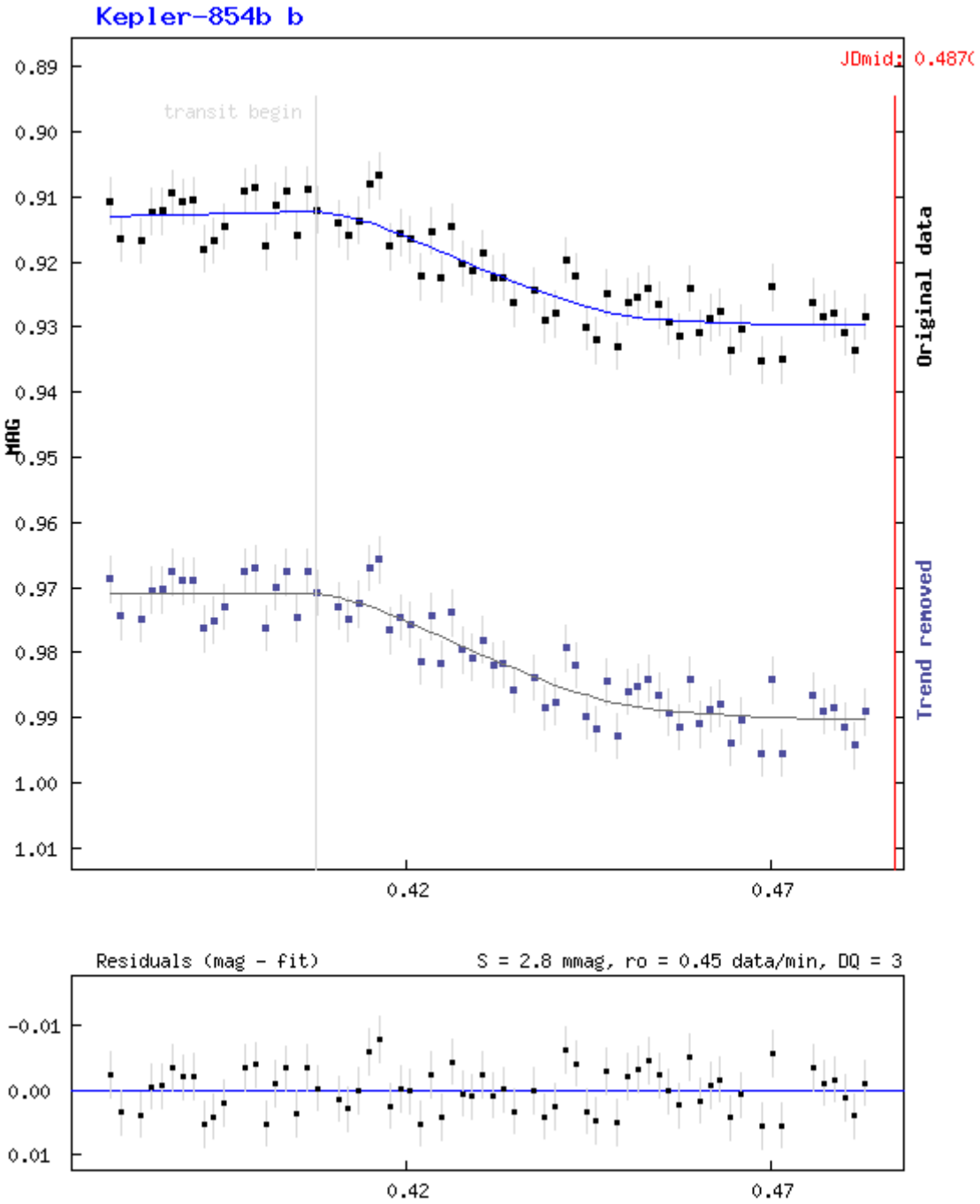
[1] *Poddany S., Brat L., Pejcha O., New Astronomy 15 (2010), pp. 297-301, Exoplanet Transit Database. Reduction and processing of the photometric data of exoplanet transits*
http://arxiv.org/abs/0909.2548

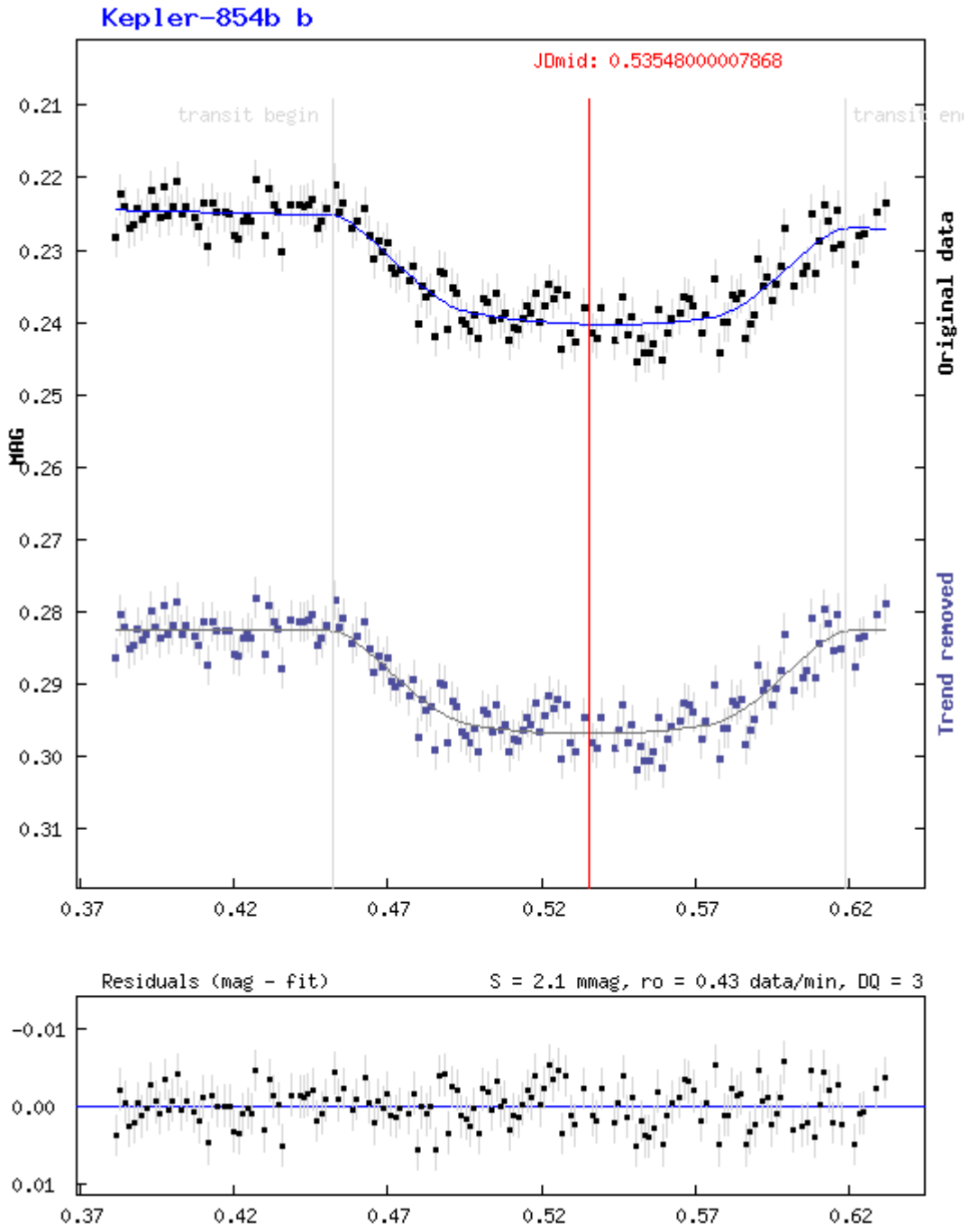
[2] *Kokori, A., Tsiaras, A., Edwards, B. et al. , Experimental Astronomy (2021) ExoClock project: an open platform for monitoring the ephemerides of Ariel targets with contributions from the public*
https://rdcu.be/cwj6C

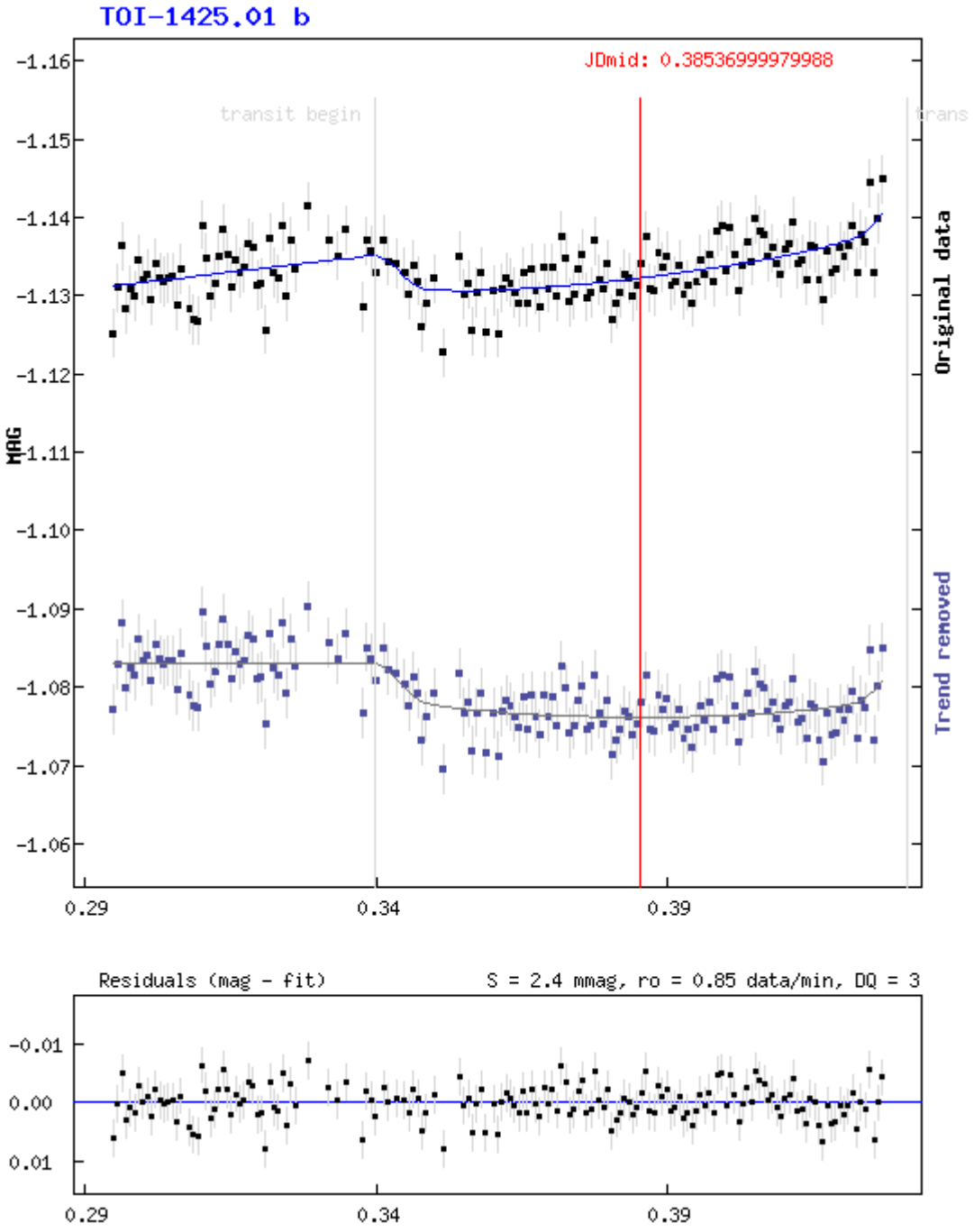
Appendix

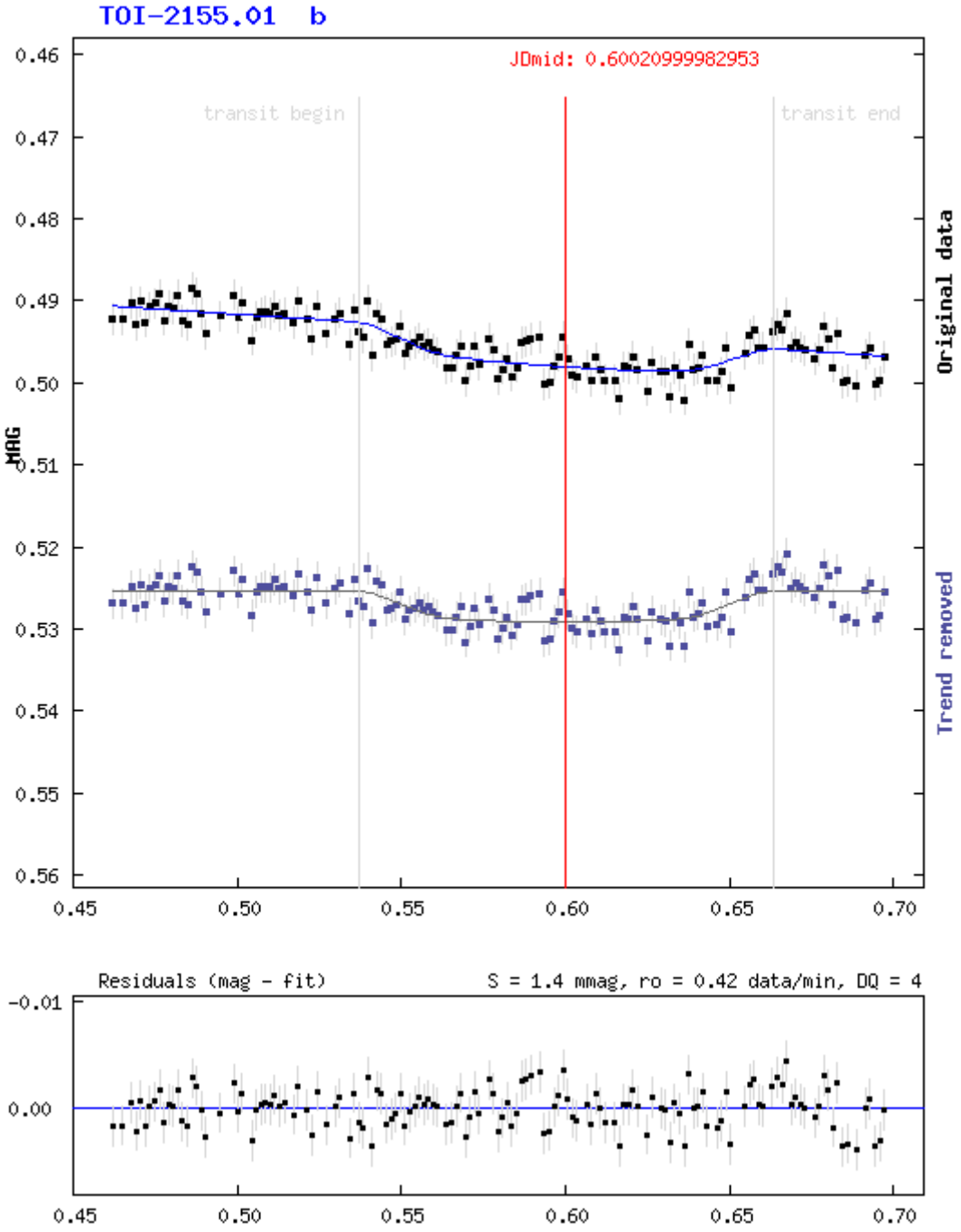
Results of exoplanets not listed in the ETD, analyzed with the algorithm of the ETD

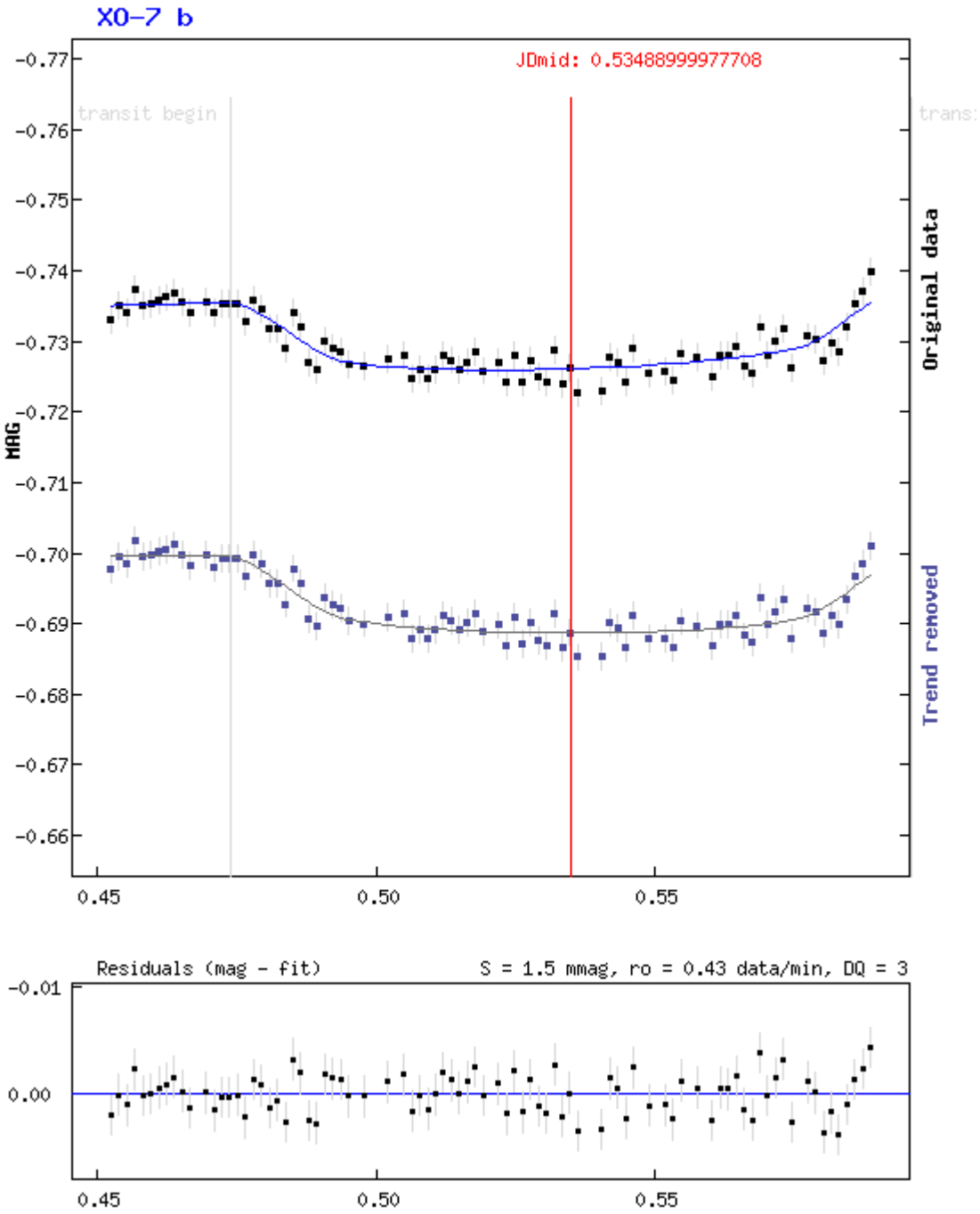



Kepler-854b b
JDmid: 0.487(
transit begin
MAG
0.89
0.90
0.91
0.92
0.93
0.94
0.95
0.96
0.97
0.98
0.99
1.00
1.01
0.42
0.47
Original data
Trend removed
Residuals (mag - fit)
S = 2.8 mmag, ro = 0.45 data/min, DQ = 3
-0.01
0.00
0.01
0.42
0.47


Kepler-854b b
JDmid: 0.53548000007868
transit begin
transit en
Original data
Trend removed
MAG
0.21
0.22
0.23
0.24
0.25
0.26
0.27
0.28
0.29
0.30
0.31
0.37
0.42
0.47
0.52
0.57
0.62
Residuals (mag - fit)
S = 2.1 mmag, ro = 0.43 data/min, DQ = 3
-0.01
0.00
0.01


TOI-1425.01 b
JDmid: 0.38536999979988
transit begin
trans
Original data
Trend removed
MAG
-1.16
-1.15
-1.14
-1.13
-1.12
-1.11
-1.10
-1.09
-1.08
-1.07
-1.06
0.29
0.34
0.39
Residuals (mag - fit)
S = 2.4 mmag, ro = 0.85 data/min, DQ = 3
-0.01
0.00
0.01
0.29
0.34
0.39


TOI-2155.01 b
JDmid: 0.60020999982953
transit begin
transit end
MAG
Original data
Trend removed
0.46
0.47
0.48
0.49
0.50
0.51
0.52
0.53
0.54
0.55
0.56
0.45
0.50
0.55
0.60
0.65
0.70
Residuals (mag - fit)
S = 1.4 mmag, ro = 0.42 data/min, DQ = 4
-0.01
0.00


X0-7 b
JDmid: 0.53488999977708
transit begin
trans
Original data
Trend removed
MAG
-0.77
-0.76
-0.75
-0.74
-0.73
-0.72
-0.71
-0.70
-0.69
-0.68
-0.67
-0.66
0.45
0.50
0.55
Residuals (mag - fit)
S = 1.5 mmag, ro = 0.43 data/min, DQ = 3
-0.01
0.00
0.45
0.50
0.55