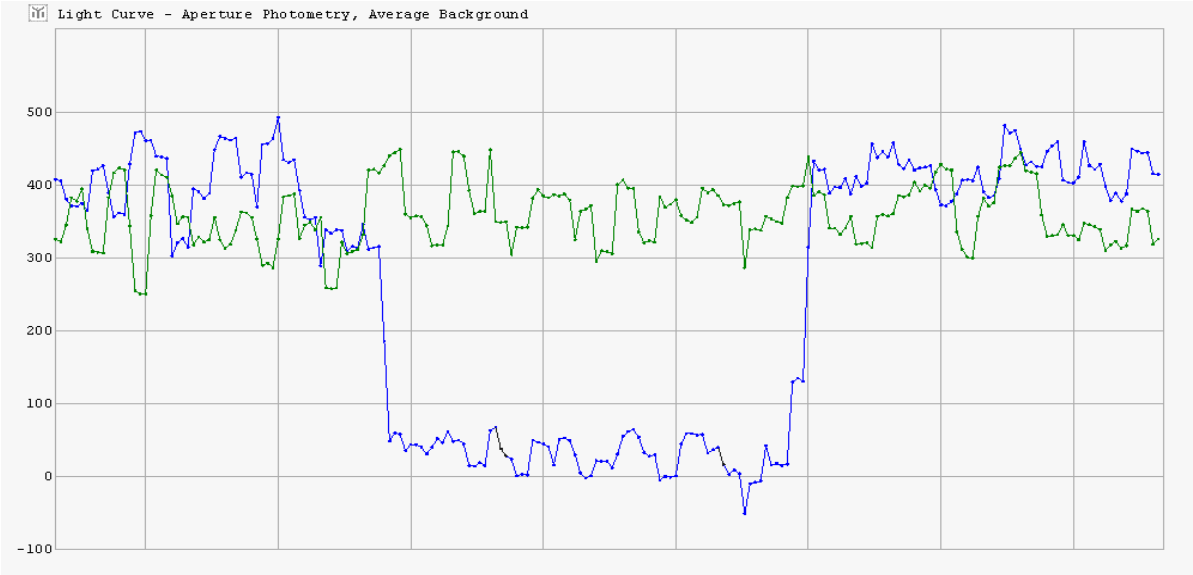
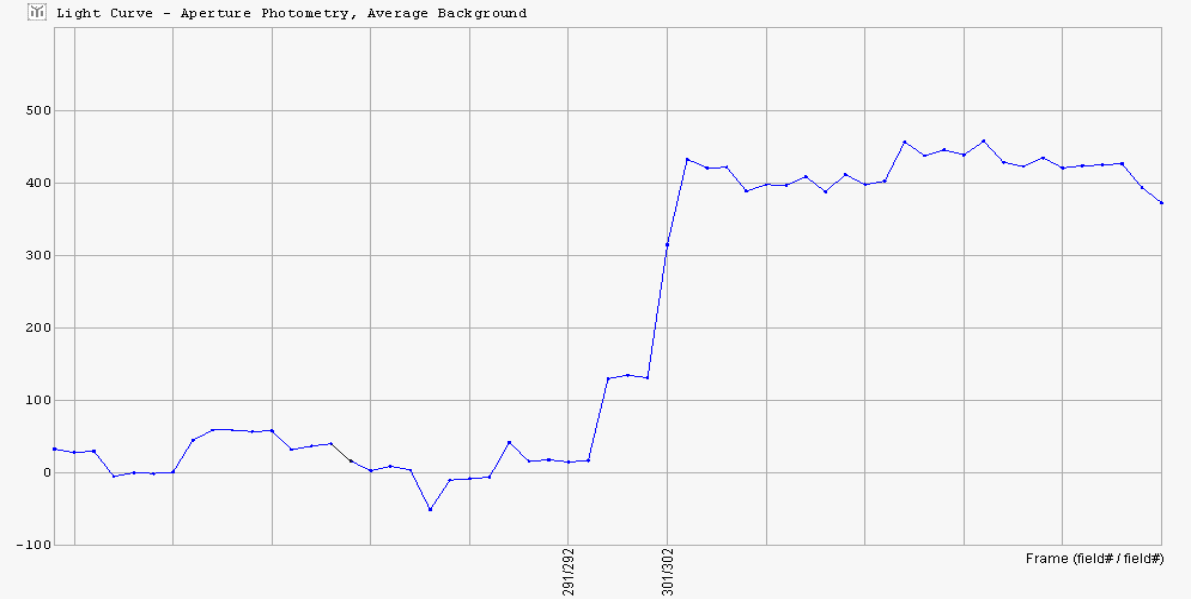
Asteroid (1341) Edmee occults star 3UC221-037195

Date	2012/01/26
Occultation start	18:41:18.12 UT
Occultation end	18:41:21.25 UT
Central time	18:41:19.69 UT
Duration	3.13s
Asteroid	(1341) Edmee, +15.3mag
Occulted star	3UC221-037195, +12.7mag
Comparison star	3UC221-037206, +12.6mag
Position	North 48° 47' 13.6" (WGS84) East 15° 14' 08.2" (WGS84) Height 546m (MSL) Nonndorf, 3830, Austria MPC C47
Camera	WAT-120N CCIR Mode 4 (It=4 frames)

Light curves of occulted star+Asteroid and comparison star



Star reappearance light curve in detail



The evaluation of the video record was done with software Tangra and Limovie. With both programs the resulting light curve showed a similar shape.

The shape of the R-curve showed a step at 26% level of the amplitude. So I had to make some further analysis about the reason for this curve step.

An accurate evaluation of the video with VirtualDub and the knowledge about the timing of the used video camera WAT-120N showed that this step is not real. It is artifical and it is caused by the used camera system and the star reappearance during the overlapping video field between two consecutive integration sequences.

The next page will give the explainations for this in some additional diagrams.

Evaluation of video and timing in detail

Video camera WAT-120N exposure in mode 4 (integrating 4 frames or 8 fields)

The star real reappearance on sky happens instantaneous and full within exposure of field Q or q. * * * * * * * * * * *

		Integration sequence odd fields								Integration sequence odd fields								Integration sequence odd fields										
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	
			Integration sequence even fields								Integration sequence even fields								Integration sequence even fields										

The star is visible first in field Q or q. So in the odd fields integration sequence "I-P" the star signal is not recorded.
In the even fields integration sequence "j-q" the star signal is recorded, but only in the last time part q.

Video camera WAT-120N alternating output signal of integrated odd and even sequences in mode 4 (integrating 4 frames or 8 fields)

			A-H	**b-i**	**A-H**	**b-i**	**A-H**	**b-i**	**A-H**	**b-i**	**I-P**	**j-q**	**I-P**	**j-q**	**I-P**	**j-q**	**I-P**	**j-q**	**Q-X**	**r-y**	**Q-X**	**r-y**	**Q-X**

Frames recorded after VTI time stamp and USB video grabber digitizing

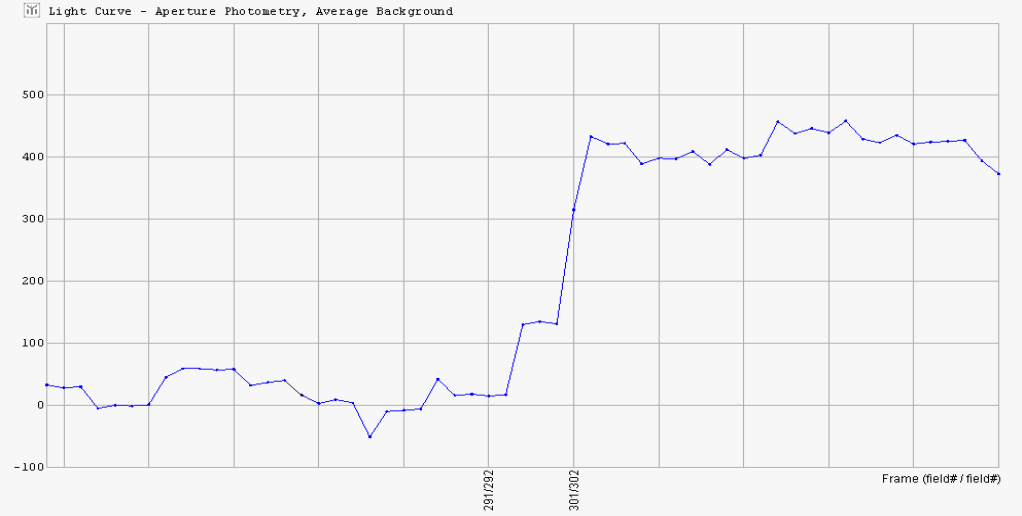
		285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306
		Frame		Frame		Frame		Frame		Frame		Frame		Frame		Frame		Frame		Frame		Frame	

Star signal contained in the video fields/frames

								x		x		x		x	**X**	**X**	**X**	**X**	**X**

So the star is visible with reduced brigthness (the step) in three recorded frames (295/296, 297/298 and 299/300). After that the recorded star brightness is rising in frame 301/302.
In integration sequences "Q-X" and "r-y" the star is recorded in full integration sequence length. From now on (303/304) the star is visible in full brightness in the recorded frames.

The star reappearance light curve confirms the artifical brightness steps caused by the integration sequence.



The conclusion of this should be always take a closer look on signal sequences in data or curves that are shorter in time than the integration time of the camera system.
In this case the real event characteristic should be evaluated manually in single steps.
So it is important to know how the used camera system is working.