Processing of comet images with an One Shot Camera in PixInsight (version 1.8.9)

The images can be stacked as usual with the script 'WeightedBatchPreProcessing' (WBPP). The star image is then obtained from the stacked sum image.

Veighted Batch Preprocessing Script v2.5.9		×
Bias Darks Flats Lights Calibration Post-Calibration Pipeline		A script to preprocess, register and
Light frames	Clear Clear Clear Hide Astrometry	integrate images Copylight © 2019-2023 Roberto Santori Copylight © 2020-2021 Adam Block Copylight © 2019 Tommaso Rubechi
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 Light_ASIImg_30sec_Bin1_14.8C_gain120_2023-01-27_222345_fi 	Interactive in case of failure	Detect masters from path
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Light_ASIImg_30sec_Bin114.8C_gain120_2023-01-27_222548_ft	Local Normalization	
Light_ASIImg_30sec_Bin114.8C_gain120_2023-01-27_222618_ft		Purge cache (82.26 MiB)
Light_ASIImg_30sec_Bin114.8C_gain120_2023-01-27_222649_fi	Interactive mode	Registration Reference Image
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											Apply to all light frames	 Rejection maps / drizzle weight: Save groups on exit
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After opening the stacked RGB image the 'ScreenTransferFunction' should be opened from the menu item 'Process' should be opened. Deactivate the chain symbol in the upper left corner, otherwise the image will have "distorted" colors, and then click on the atom sign. The images will get an automatic stretching.

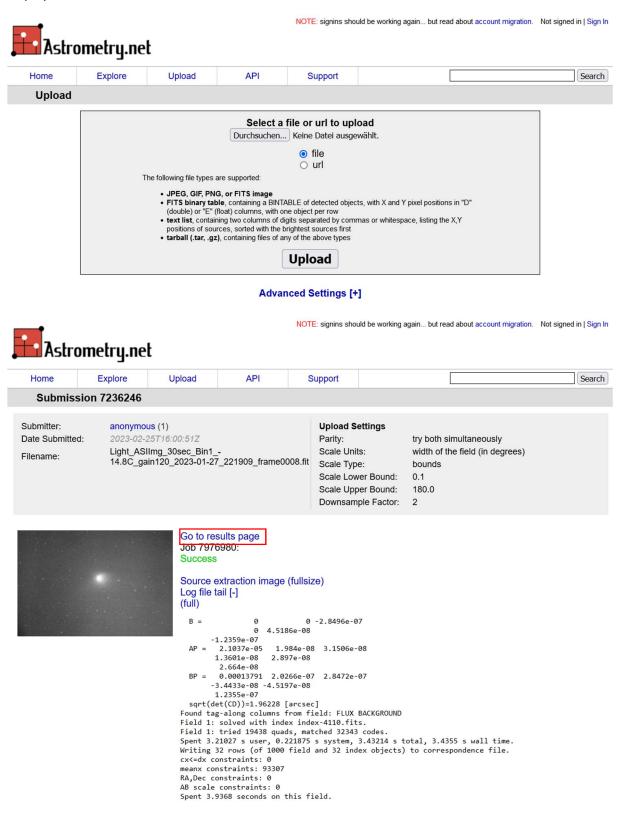


The stacked image shows the starry sky with the comet's path.



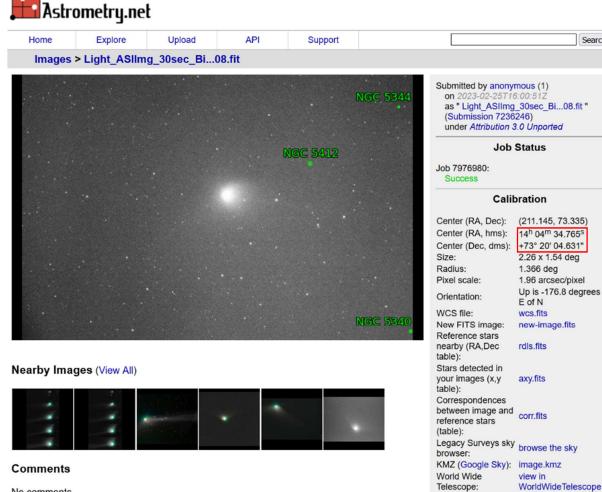
To perform a color calibration of the stars using 'SpectroPhotometricColorCalibration', PixInsight needs the position of the comet in the sky. If this is not available, the position can be determined via the website https://nva.astrometry.net/upload ermittelt werden.

To do this, a single image is uploaded to the page, and after some calculation time the result is displayed.



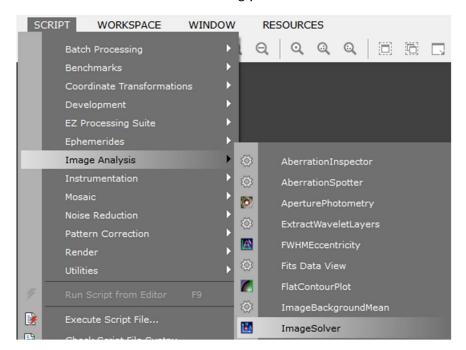
NOTE: signins should be working again... but read about account migration. Not signed in | Sign In

Search



No comments.

These sky coordinates can now be used in PixInsight. For this the script 'ImageSolver' is opened and the coordinates are entered accordingly.

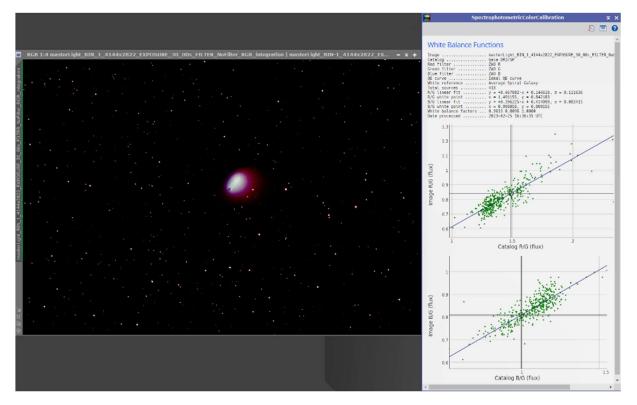


💡 Image Plate Solver	Script ×
Copyright © 2012-2022 A	A script for plate solving astronomical images. ndrés del Pozo 22 Juan Conejero (PTeam)
Target Image	\$
	Active window List of files
Image Parameters	\$
Right Ascension: Declination: Date and time:	73 • • 20 • • 4.63 • S 2023 • Y 1 • M 27 • d 21 • h 19 • m 55 • Topocentric Topocentric • • • • • • •
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Advanced Parameters	÷.
Distortion Correctio	n 🏹
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After confirming with 'OK', the color calibration of the stars can now be performed using the 'SpectroPhotometricColorCalibration' process.

S	pectrophotometricColorCalibration	×
Calibration		ź
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Green filter:	ZWO G	Curve Explorer
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	Generate star maps	
	Generate text files	
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Lower limit:	-2.80	
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Left:		
Width:		From Preview

The process is started by dragging the triangle onto the image. The colors are calibrated and the star colors are adjusted using the latest Gaia measurement data. The result is an image with such a graph.



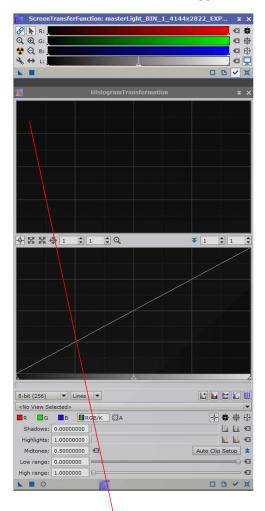
To display the image correctly, the 'ScreenTransferFunction' is used again. Since the colors are now calibrated, this time the chain symbol is activated and then the autostretch function is performed again via the atom symbol.





To extract the stars, the image is now stretched. This can be done in three ways.

For the first way the process 'HistogramTransformation' is used. For this, the triangle of the 'ScreenTransferFunction' is dragged into the bar below the 'HistogramTransformation'.

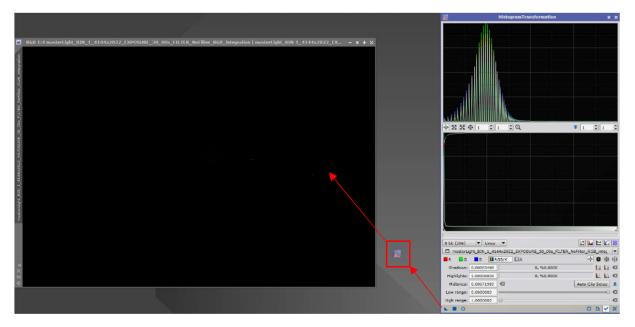


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Afterwards the 'ScreenTransferFunction' is reset.

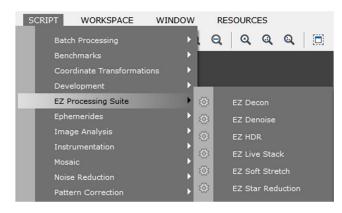
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Then the triangle of the 'HistogramTransformation' is dragged onto the image.

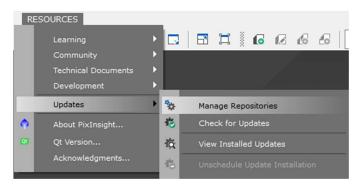




In the second possible way, a prefabricated script from EZ Processing Suite is used.



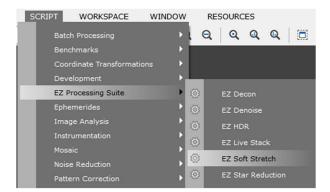
To include this in PixInsight, the following link <u>"https://darkarchon.internet-box.ch:8443/</u>" must be added under 'Resources - Updates - Manage Repositories'.

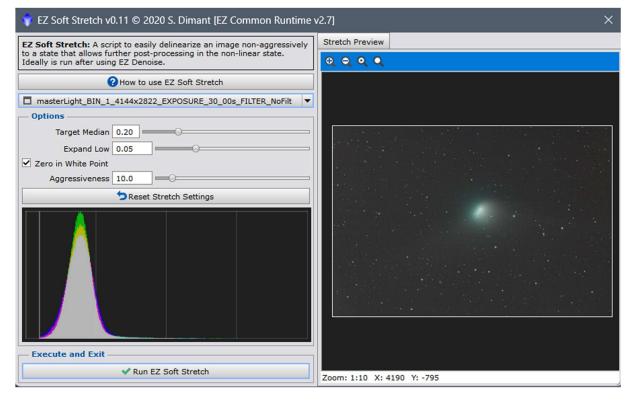


💗 Manage Update Repositories			×
https://pixinsight.com/update/1.8.9-1/			
https://pixinsight.com/update-doc/1.8.9-1/			
https://pixinsight.com/update-eph/1.8.9-1/			
https://pixinsight.com/update-db/1.8.9-1/			
https://www.skypixels.at/HVB_Repository/			
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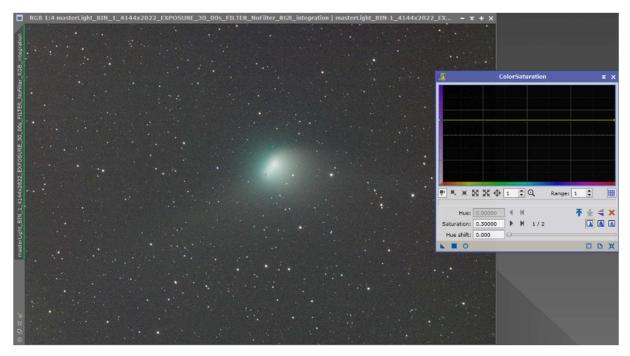
Then select "Check for Updates" in the same menu tree. It may be that PixInsight must be restarted before the script can be used.

Once the script is installed, EZ Soft Stretch can be selected and applied to the image.

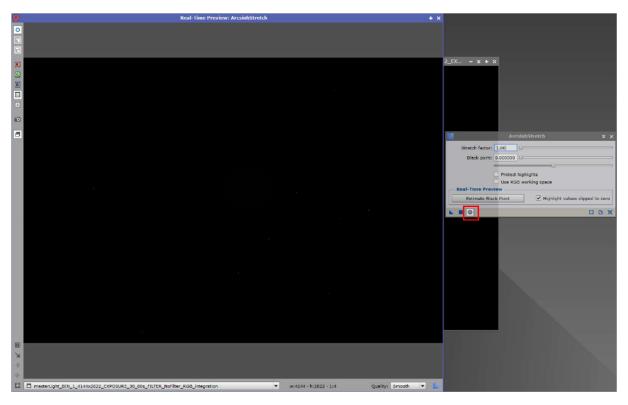


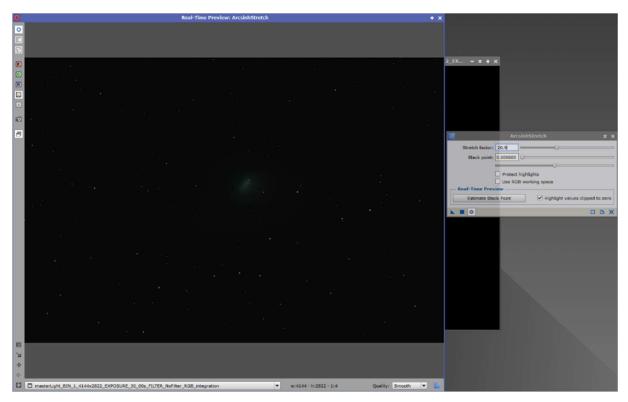


The third way involves manual stretching. Here, the stars can be slightly saturated via the 'ColorSaturation' process, which is also possible in the other two ways.



Afterwards the autostretch function of the 'ScreenTransferFunction' is deactivated again and the process 'ArcSinStretch' is started. A preview image is displayed via the lower circle.

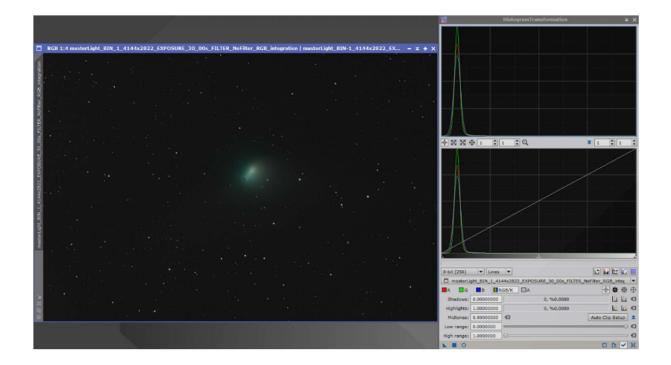




The 'Stretch factor' is used to stretch the stars so that the colors do not look too unnatural.

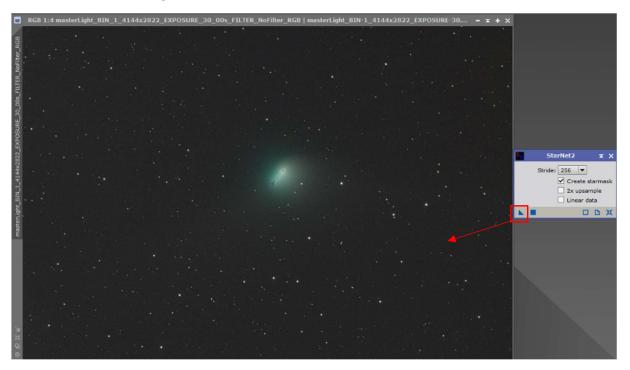
The triangle is used to apply the settings from the preview image to the image. The remaining stretching is done with the 'HistogramTransformation'.

Move the middle slider to the left until an acceptable result can be seen.

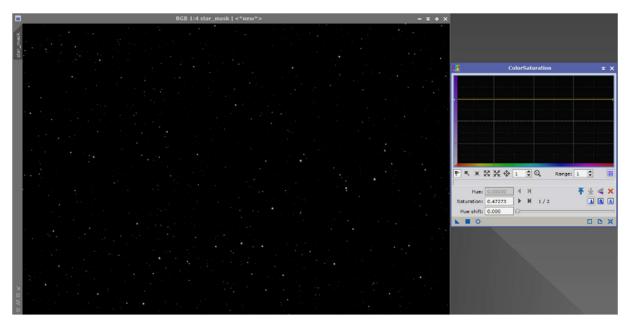


Once the image has been stretched via one of the three paths, the stars can be extracted with the help of the process 'StarNet2'. If the process 'StarNet2' is not yet installed, this can be done with the help of these instructions: <u>https://www.galactic-hunter.com/post/starnet2</u>

After starting the process, the blue triangle can be dragged onto the image and the stars will be extracted in an extra image.



The star colors can be saturated with the 'Saturation' process.



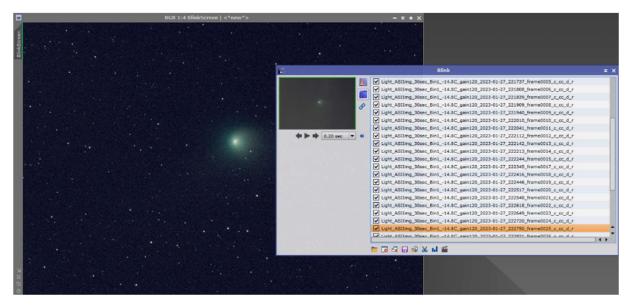
The extracted stars can be reduced for the time being with the icon in the upper right corner, and the background image can be closed.



The goal is now to extract the comet from the individual images and to produce a sum image from this comet only, in order to reunite it with the stars afterwards.

In the stacking process, all images were aligned to each other at the stars of the respective frames, causing the comet to slowly "wander" through the image.

The can be illustrated with the process 'Blink'.



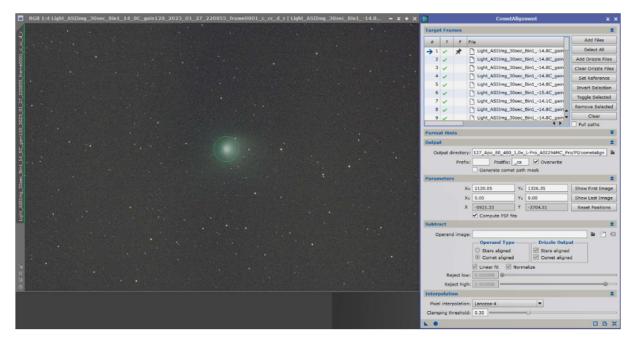
For this purpose, the registered images with the extension '_r' are opened from the working folder 'registered' and played via the play button.

To align the images to the comet, the 'CometAlignment' process is opened, the images from the 'registered' folder are inserted via 'Add Files', and an output folder is specified.

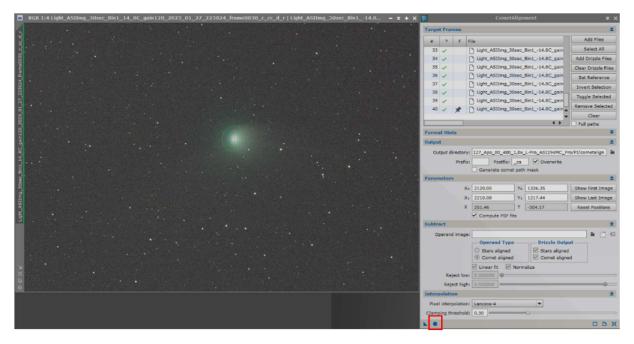
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3	~		Light_ASIImg_30	sec_Bin114.8C_gain	Clear Drizzle Files
4	1		Light_ASIImg_30)sec_Bin114.8C_gain	Set Reference
5	~		Light_ASIImg_30	sec_Bin114.8C_gain	Invert Selection
6	~			Sec_Bin115.4C_gain	Toggle Selected
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Now the start and end point of the comet's motion must be defined.

To do this, select the first image and click on 'Show First Image'. The image opens on which the comet is marked with the mouse. (Use the autostretch function of the 'ScreenTransferFunction' to make the comet visible).



The same is done with the last position point. The last image is marked and then clicked on 'Show Last Image'. With the mouse the position of the comet is marked again. (Use the autostretch function of the 'ScreenTransferFunction' to make the comet visible).



The remaining settings can be left as they are, and clicking on the round circle starts the process. Now all images are registered on the comets and they can be united afterwards. To do this, the 'ImageIntegration' process is opened and the registered images from the previously created working folder of the CometAligment are inserted.

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3	~	Light_ASIImg_30sec_Bin114.8C_gain120	Clear L.Norm, Files
4	1	Light_ASIImg_30sec_Bin114.8C_gain120	Clear L.Norm. Files
5	-	Light_ASIImg_30sec_Bin114.8C_gain120	Add Drizzle Files
6	1	Light_ASIImg_30sec_Bin114.8C_gain120	Clear Drizzle Files
7	~	Light_ASIImg_30sec_Bin114.8C_gain120	Set Reference
8	~	Light_ASIImg_30sec_Bin114.8C_gain120	
9	~	Light_ASIImg_30sec_Bin114.8C_gain120	Select All
10	-	Light_ASIImg_30sec_Bin114.8C_gain120	Invert Selection
11	1	Light_ASIImg_30sec_Bin114.8C_gain120	Toggle Selected
12	~	Light_ASIImg_30sec_Bin114.8C_gain120	
13	~	Light_ASIImg_30sec_Bin114.8C_gain120	Remove Selected
14	1	Light_ASIImg_30sec_Bin114.8C_gain120	Clear
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In this process, the stars are now to be extracted at the same time, since they leave long traces in the images just aligned with the comet.



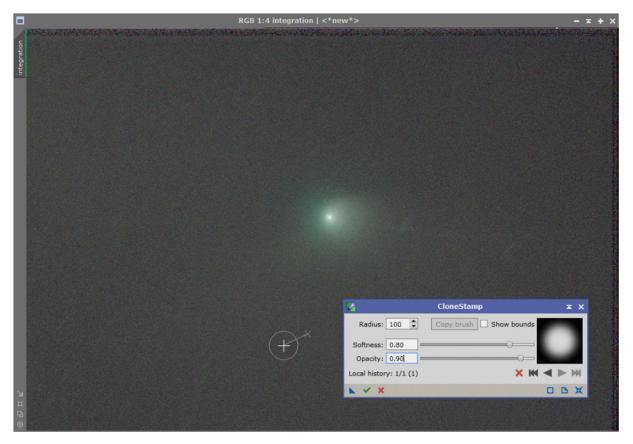
For this purpose, the 'Winsorized Sigma Clipping' algorithm is selected in the 'Pixel Rejection (1)' section, and the 'Sigma high' value is lowered to zero in the 'Pixel Rejection (2)' section.

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		Bin114.8C_gain120	Clear L.Norm. Files
		Bin114.8C_gain120	
		Bin114.8C_gain120	Add Drizzle Files
		Bin114.8C_gain120 Bin114.8C_gain120	Clear Drizzle Files
		Bin114.8C_gain120	Set Reference
		Bin114.8C_gain120	Select All
10 🗸 Ligh	t_ASIImg_30sec_	Bin114.8C_gain120	Invert Selection
11 🗸 Ligh	t_ASIImg_30sec_	Bin114.8C_gain120	Toggle Selected
		Bin114.8C_gain120	Remove Selected
		Bin114.8C_gain120	
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The other settings can be kept like this, and clicking on the round circle will start the process.

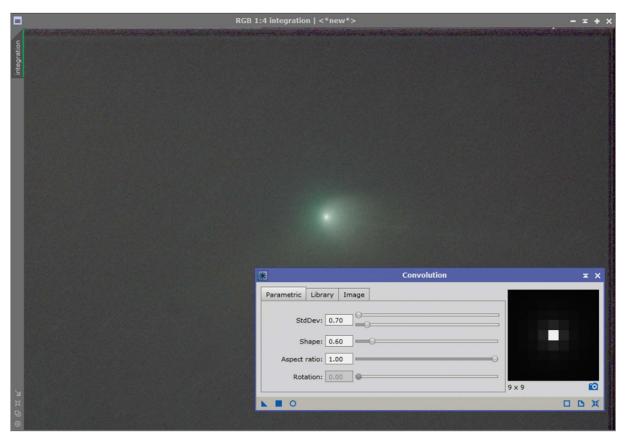


In the resulting image you can still see a few artifacts of the star trails. These can be corrected with the 'CloneStamp' process and a blur setting. (For this you can also switch to another editing program like Photoshop or GIMP).





With the process 'Convolution' the background can still be softened very slightly.



The colors can now be calibrated via the 'BackgroundNeutralization' process.

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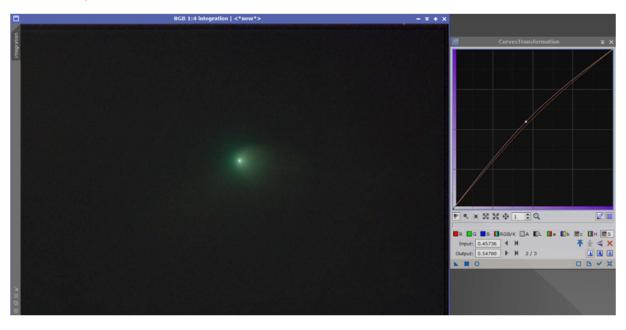
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Auto Clip Setup

୍ ପ = ପ The image is then stretched using the 'HistogramTransformation'.



With the help of the 'CurvesTransformation' the colors can be saturated a bit more.



Now the process 'PixelMath' is called to merge the comet image with the star image.

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Clicking on the 'Expression Editor' button opens the editing window, in which the two images can be merged by double-clicking on them and adding the plus sign.

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Confirm with 'Ok', and then drag the blue triangle onto the comet image.



RGB 1:5 integration | <*new*> - = + × Size/Position + Width: 3699.00 Height: 2422.00 Anchor X: 2119.50 Anchor Y: 1336.00 otation Angle (°): 0.00000 Clockwise: Center X: 2119.50 nter Y: 1336.00 Vise fast n Ce Scale Interpolation Algorithm: Auto Clamping: 0.30 ess: 1.50 Gamma correct Resolution Fill Color Ŧ U D A X

Using the 'DynamicCrop' process, the edges can still be cropped accordingly.



The resulting image can now be further colorized and/or denoised depending on the quality.