

Object

PK164+31.1

Common Name Headphone Nebula
 Alternate Name Jones-Emberson 1
 Visual Magnitude 13
 Distance ► Object 1600
 Apparent Size 6,8x6,0"
 Object R.A. 07h 57m 51.628s
 Object DEC +53° 25' 16.96"
 WikiLink https://en.wikipedia.org/wiki/Jones-Emberson_1



20240309-231445_PK164+31.1_ZWOASI294_0001-02.jpg

Link ► Picture [PK164+31.1_20240309](#)
 Description Planetary nebula
 Constellation Lynx

Picture Data

Work Status	PostProcessed	Quality	***
Format	Photo	Picture Center R.A.	07h 57m 55.844s
Tot./Act. Frames/Pane	20 10	Picture Center DEC	+53° 25' 40.140"
H / V Panes	1 1	H/V FoV [°]	0,6739 0,4586
Exp. [s] / Frame	180	Above horizon [°]	0
Total Time / Pane [min]	30,00 30,00	View Direction	N

Camera Data

ZWO
ASI294MC-Pro
ZWOASI294

Camera Angle [°]	92,7	Pixel Pitch [µm]	4,63
Gain or ISO	120	Camera Temp. °C	-10

Observation Data

Observation Start	2024-03-09T22:17:46 UTC+/- +1h	Observation End	2024-03-09T23:14:45
Observation Site	DE GÖ MBR	Site Elevation /Bortle	182 5
Province	NDS	Site Coordinates	51° 34' N, 9° 56' E

Sky & Moon

Sky Quality	1,37	Outside Temp. °C	3
Seeing Index 1	5	Seeing Index 2	5
Moon Phase	4th quarter	Moon Age [d]	28,9
Moon Percent %	0	Distance ► Target	UNKNOWN
MoonRise	06:47:00	MoonSet	17:00:00

Optical Config.

TS1624cAS294
TS1624cAS294E100T53

Lens or Scope	TS1624	FocalLength [mm]	1624
Type Of Build	Ritchey-Chretien Reflector	Diameter [mm]	203
Brand	TS-Optics	Aperture / f-stop	8,00
Additional Optics	-	DawesLimitLink	1,45 Arcsec
Filter	Optolong 2" L-eNhanche	Optical Scale ["/px]	0,588
Focuser	2.5" Crayford		
Focuser Position	14,52	EAF Position	6363

Other Hardware & Software

GuideScope	ZWO 30/120 mini	Mount	iOptron iEQ45 Pro
GuiderHW	ASIAIR	SessionControl	ASIAIR
GuiderSW	ASIAIR	PostProcessingSW	PS, PixInsight

More ...

 Work Folder [2024\20240309-221746_PK164+31.1_GOE-MBR](#)

Comment

 Remarks [1. Session Planning](#)

The session was intended to test the collimation of the telescope. SkySafariPro and SkyAtlas

of the ASIair was used to plan the test.

2. Location and sky

Relatively good, but due to the strong sky glow from the nearby city the object was too faint to give good results. The moon was not visible during the observation.

3. Session Results

a) Relatively poor result, only 10 of the 20 light frames were finally used for image integration resulting in a rather short exposure time of only 30 minutes net. Without the first time tested AI-based NoiseXTerminator plugin from RC-Astro the quality would have been disastrous. Thanks to NoiseXTerminator, it was still possible to generate an acceptable image for the general conditions in the end.

b) The collimation of the telescope is still not good. Plate solve (PixInsight: Script > Image Analysis > Image Plate Solver Script) resulted in a focal length of 1602mm instead of the nominal focal length of 1624mm and the stars still do not appear as clean dots but as light rings or larger blobs.

4. Plate Solving and Camera Rotation Results

ASIAIR SkyAtlas planned rotation:

ASIAIR Plate Solve result after GoTo:

Astrometry.net rotation measurement:

5. Post Processing

Image selection, registration, background enhancement and color correction were done in PixInsight (Post Processing using PixInsight (starlust.de)).

PixInsight Steps:

1. Subframe selector: reduced frame count from 20 to 12 (deselected all frames with a FWHM > 9)
2. Blink: deleted frame #0005 (with satellite traces). Used remaining 11 frames for post processing.
3. WBPS Script using:
 1. Bias: MasterBias50_1.0ms_T-10C_20230704-103931.fit
 2. Darks: MasterDark20_180.0s_20230703-185118.fit
 3. Flat: _Astro\Observations\2024\20240309-221746_PK164+31.1_GOE-MBR\Flat\MasterFlat_Stack20_1.0ms_Bin1_gain120_20240309-172244.fit
 4. One more frame failed during Local Normalization, 10 frames used for final image integration
4. PCC APASS DR10
5. BN: Lower: 0.0, Upper: 0.1, Target Background: 0.0002
6. NoiseXTerminator Denoise: 1.0, Detail 0.27
7. Full final stretch and export to jpg format

Photoshop Steps:

used multiple iterations to get rid of the violet blur that surrounded the central object. No color or hue changes were made; the final image has natural colors.

6. Lessons Learned

Targets should be brighter than mag 12 or 13 for better results.

7. Main logfile entries

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