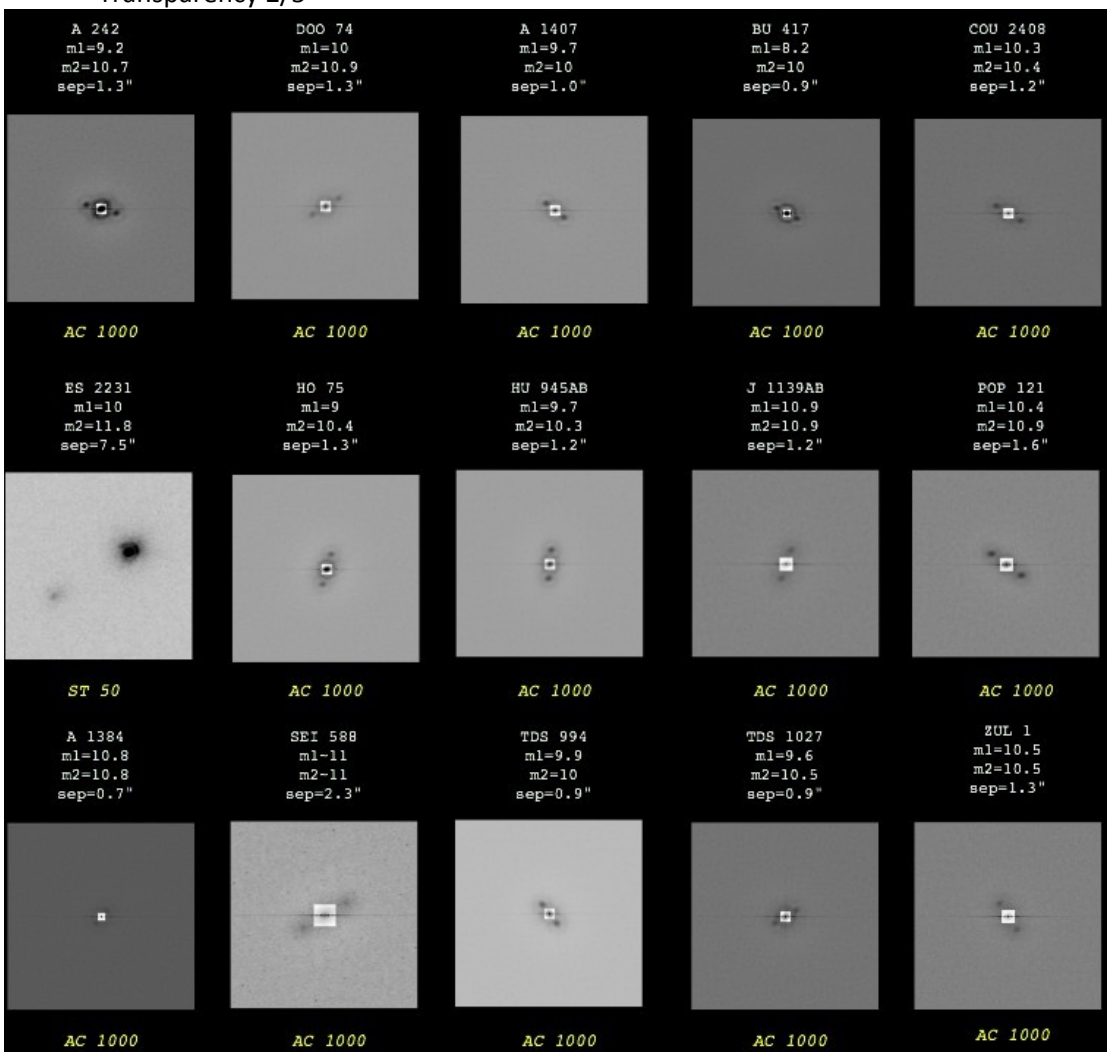
Application Note – Astronomy

KITE, FALCON & OWL ASTRONOMY DATA

Kite Double Star:

Equipment & Conditions: Courtesy of Jocelyn Sérot

- Celestron C11 telescope (D=280mm)
- Barlow 3x + Barlow 2x (F=17.2m, E=0.12”/pixel)
- Filter IR-Block Baader
- Exposure time 20-40ms with EM Gain, 1000 acquisitions per double star.
- Magnitudes ranging from about 9 to 11
- Post processing software: Reduc 4.63
  - ST <nn>: sum of the best nn images
  - AC <nn>: auto-correlation of best nn images
  - IT <nn>: inter-correlation of best nn images.
- Seeing 4/10
- Transparency 2/5



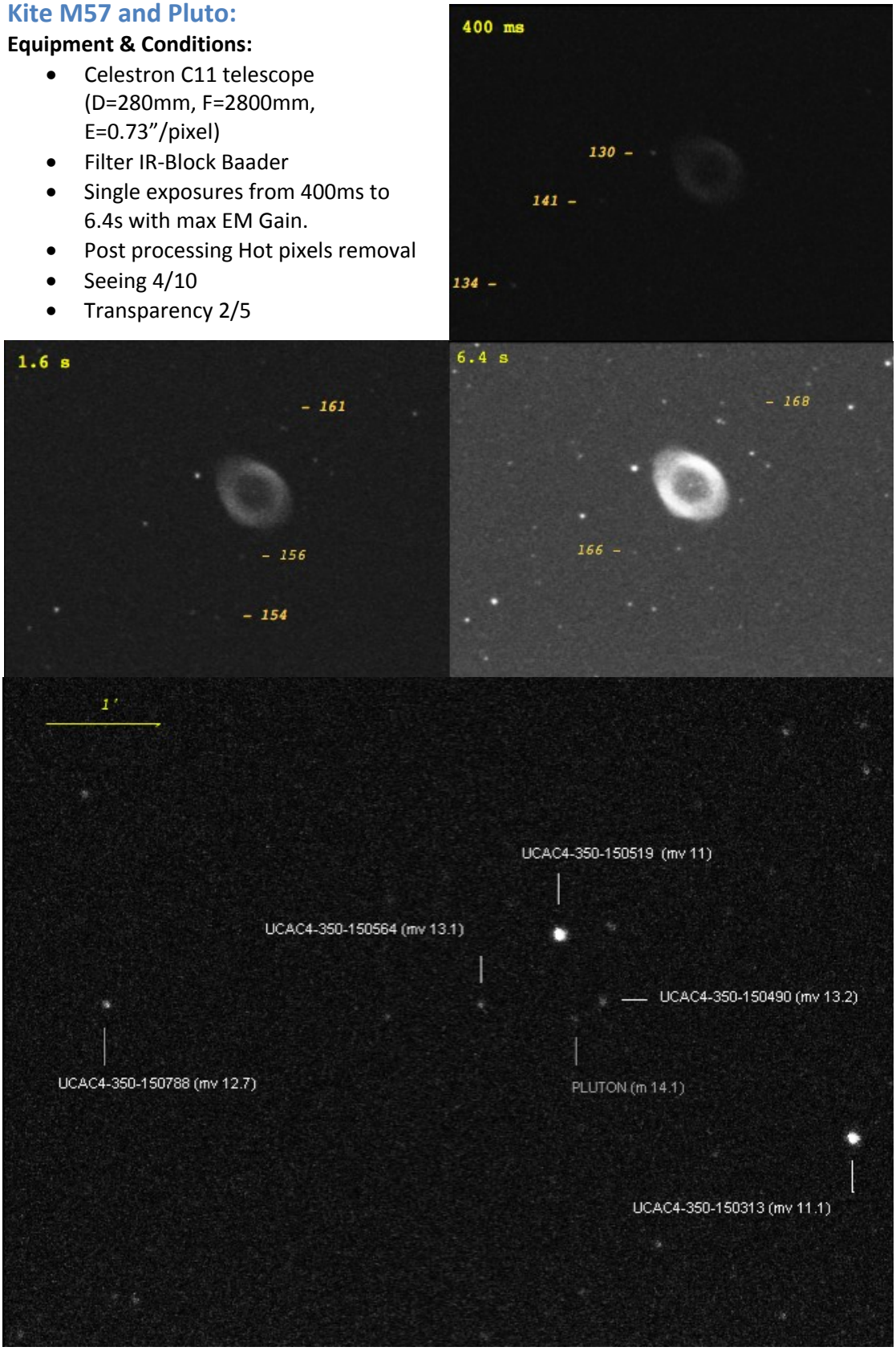
Results:

- Good measures up to m1 and m2=11 and ρ =0.9” for dM < 2
- Beyond, harder measures unless the best 10 to 20 images are carefully selected.
- It seems difficult to go below ρ =0.8” for m>10 and/or dM>2

Kite M57 and Pluto:

Equipment & Conditions:

- Celestron C11 telescope (D=280mm, F=2800mm, E=0.73”/pixel)
- Filter IR-Block Baader
- Single exposures from 400ms to 6.4s with max EM Gain.
- Post processing Hot pixels removal
- Seeing 4/10
- Transparency 2/5



Results:

- Magnitude 14 in 400ms
- Magnitude 15 in <1s
- Close to magnitude 17 in 6.4s.

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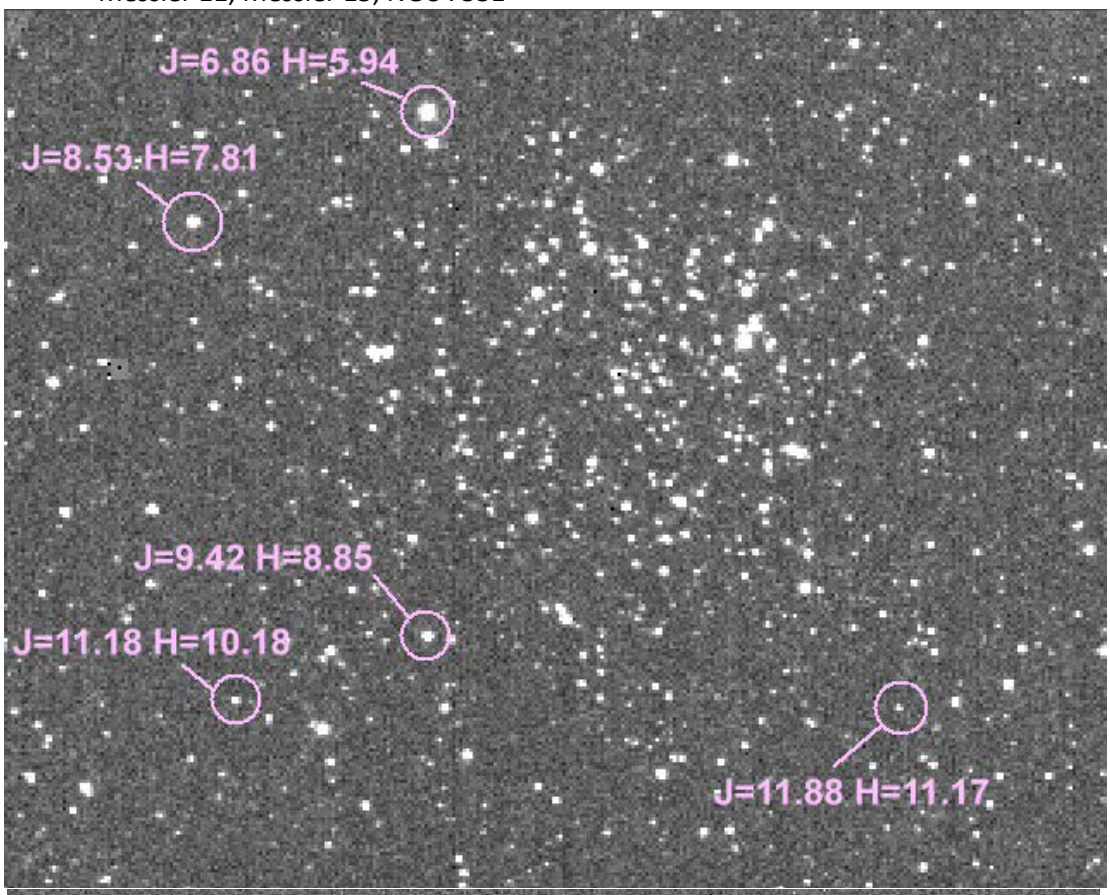
Owl 320:

Equipment & Conditions:

Courtesy of Alain Klotz, Michel Boër, Jean-Pierre Rivet and Philippe Bendjoya

- 1m telescope from C2PU (D=1.0m, F=3.4m, 1.820 arcsec/pixel)
- Exposure time 50ms, 100x acquisitions without NUC or with offset correction
- Messier 11, Messier 15, NGC 7331



- Astra group :
  - ASTRA 1N 9.9 (magnitude J)
  - ASTRA 2A 10.3 (magnitude J)
  - ASTRA 2F 10.0 (magnitude J)

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Results:

- Readout noise (132±6) electron/pixel
- Dark current (121,000±1,000) electron/pixel/sec at 15°C
- Linearity <0.5%
- With a 1m telescope, magnitude J=14.6 can be achieved in 5s (100 x 50ms)
- Extrapolations:
  - With -40°C cooling 1.2 magnitudes would be gained on the detection limit
  - With a 30cm telescope 1.4 magnitudes would be lost on the detection limit

Osprey:

Equipment & Conditions:
Courtesy of Philippe Lamy, Laboratoire d'Astrophysique de Marseille

- Solar eclipse 3rd of November 2013 in Gabon
- Lunette Televue-85: f=600mm, dia=85mm, f/7
- IFOV = 1.89 arcsec/pixel
- Exposure time 0.3 sec

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Results:

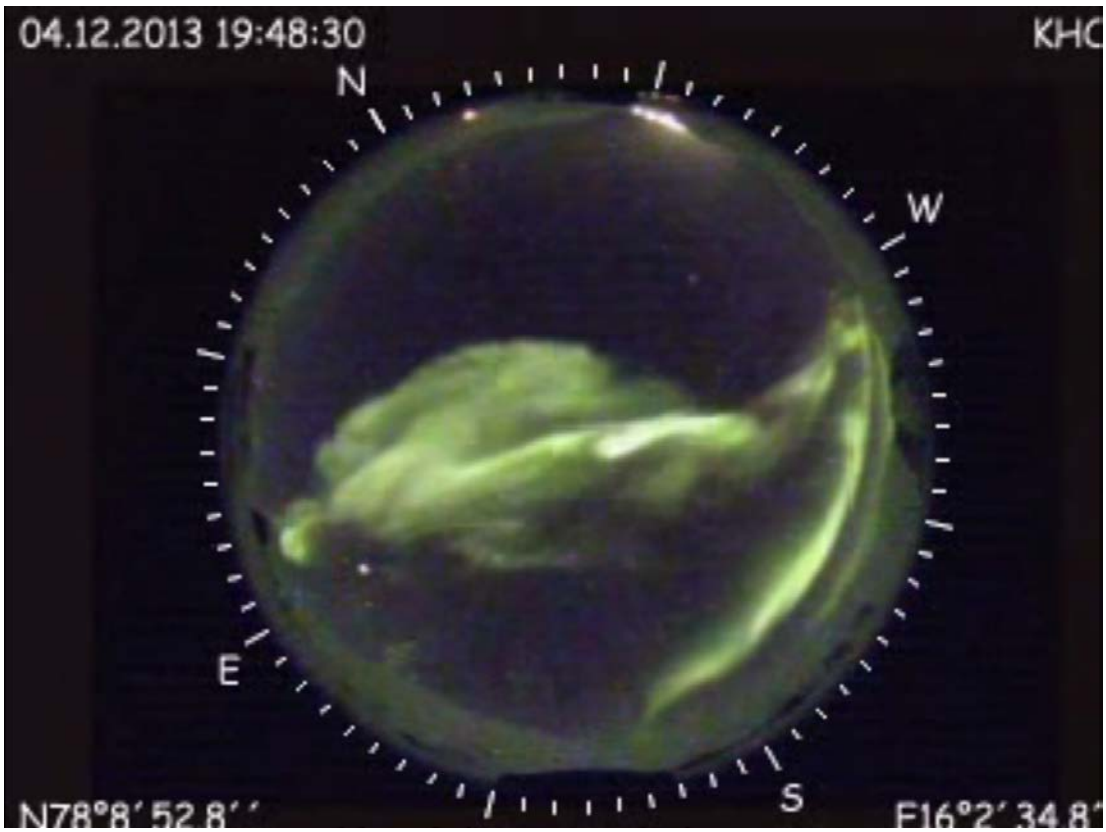
- Analysis in progress

Hawk All-Sky color video:

Equipment & Conditions:

Courtesy of Dr. Fred Sigernes, Kjell Henriksen Observatory (KHO), The University Centre in Svalbard (UNIS), http://kho.unis.no/Raptor.htm

- Northern Lights monitoring
- Camera: Raptor Hawk EM246
- Mode: EMCCD auto gain
- Color matrix: CYMG
- Lens: Fujinon C-mount F/1.4 (185 degree circular)
- Spatial coverage: All sky
- Resolution: PAL 352 x 288 pixels
- Frame Accumulation: DirectShow Capture XE-1s
- Data storage: Hourly AVI movies (Xvid compression)
- Quicklook refresh time: 60s


04.12.2013 19:48:30
KHC
N
W
E
S
N78°8′ 52.8′′
E16°2′ 34.8′