

Deep optical-NIR imaging of nearby supernova sites

(S11A continuation)

Hanin Kuncarayakti

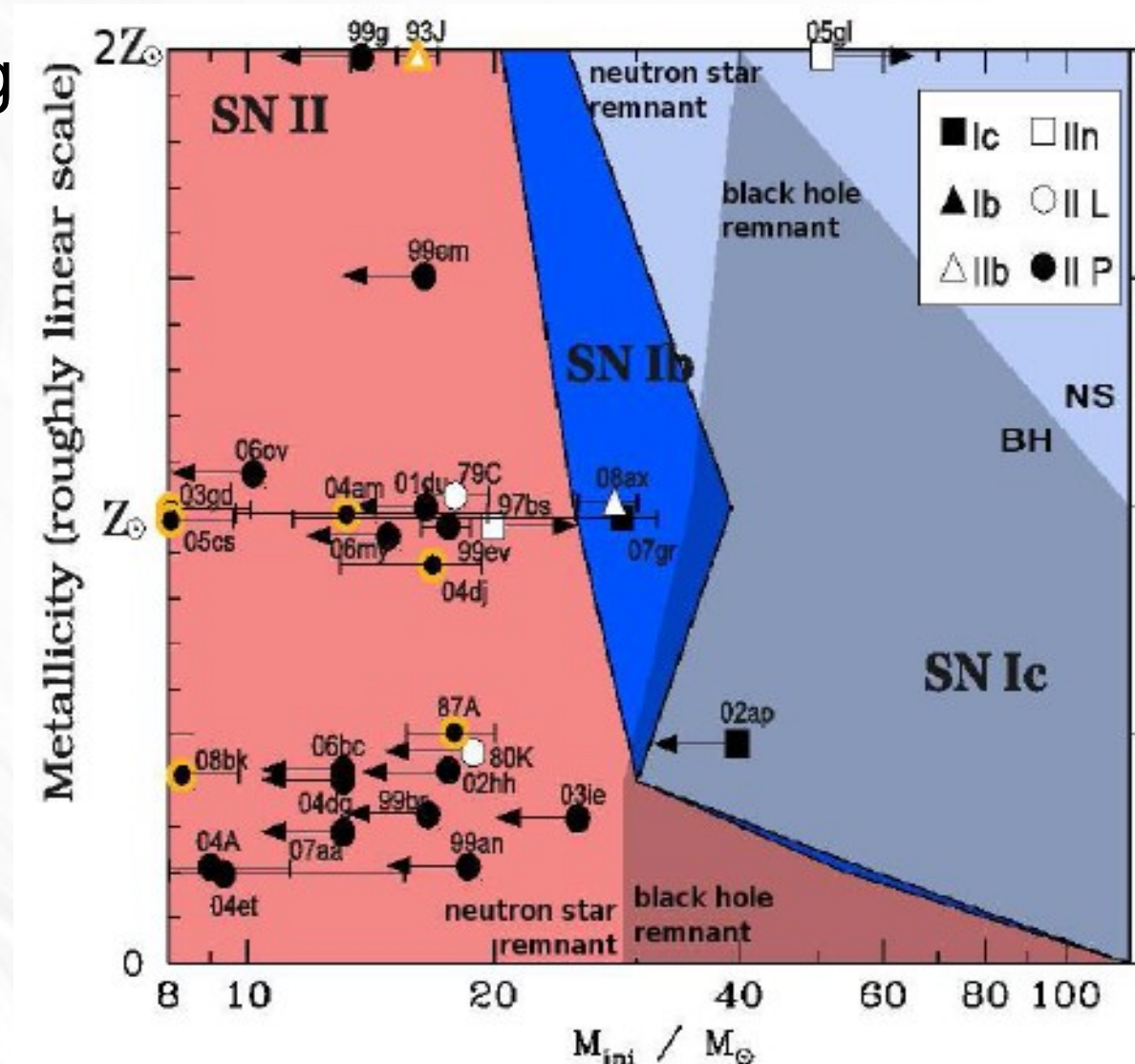
with M. Doi, G. Aldering (LBNL), N. Arimoto
(NAOJ), K. Maeda (IPMU), T. Morokuma, R.
Pereira (U. Lyon)

Outline

- Background & review
- ANIR S11A evaluation
- Proposed S11B observation

Background & review

- Current understanding of core-collapse supernova (CCSN) progenitors is still limited
- Progenitor mass & metallicity are the main parameters
- Need to constrain theoretical models

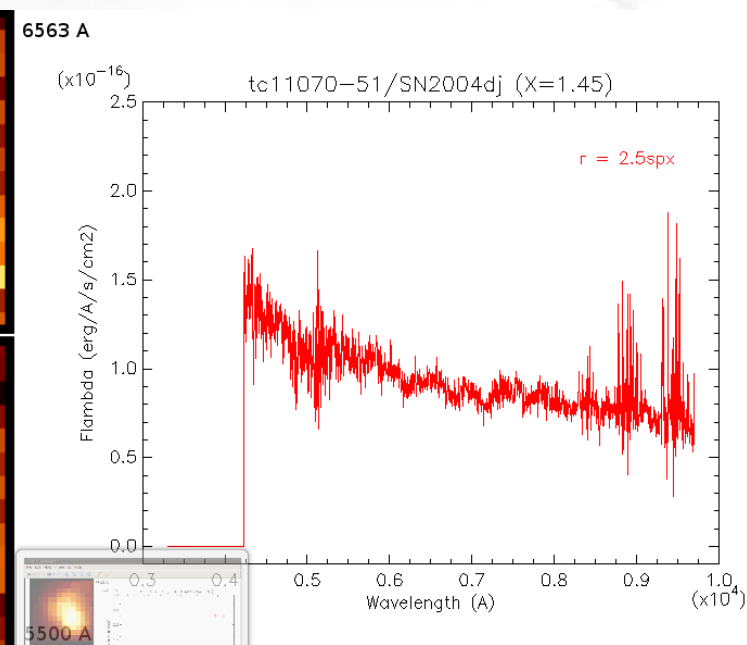
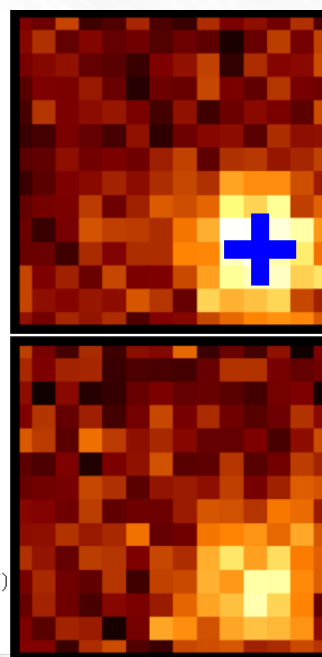
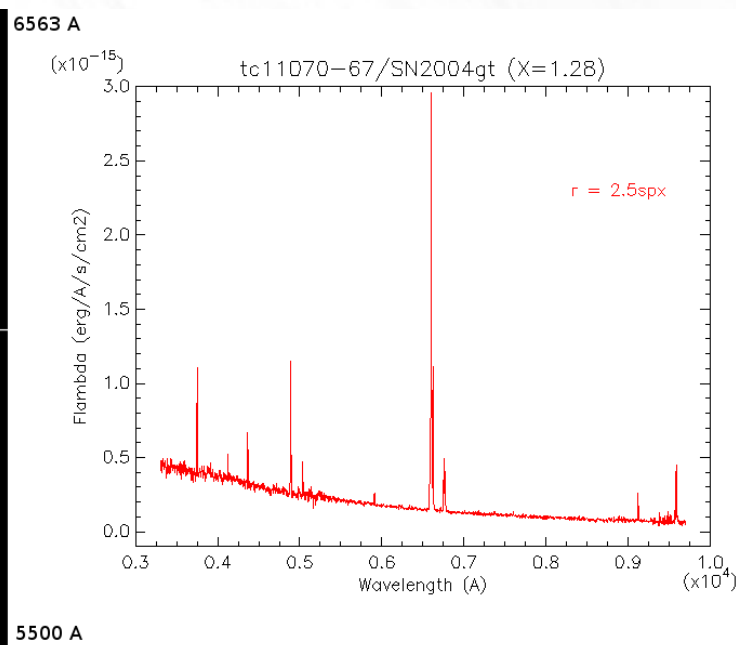
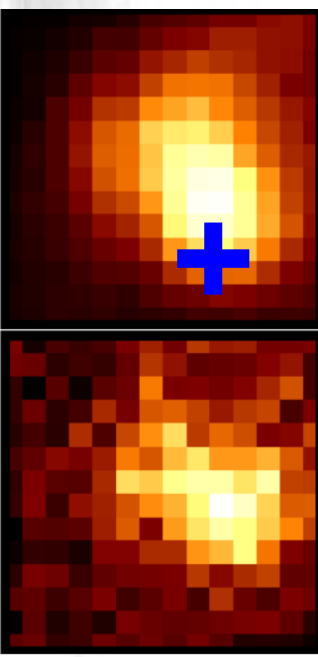
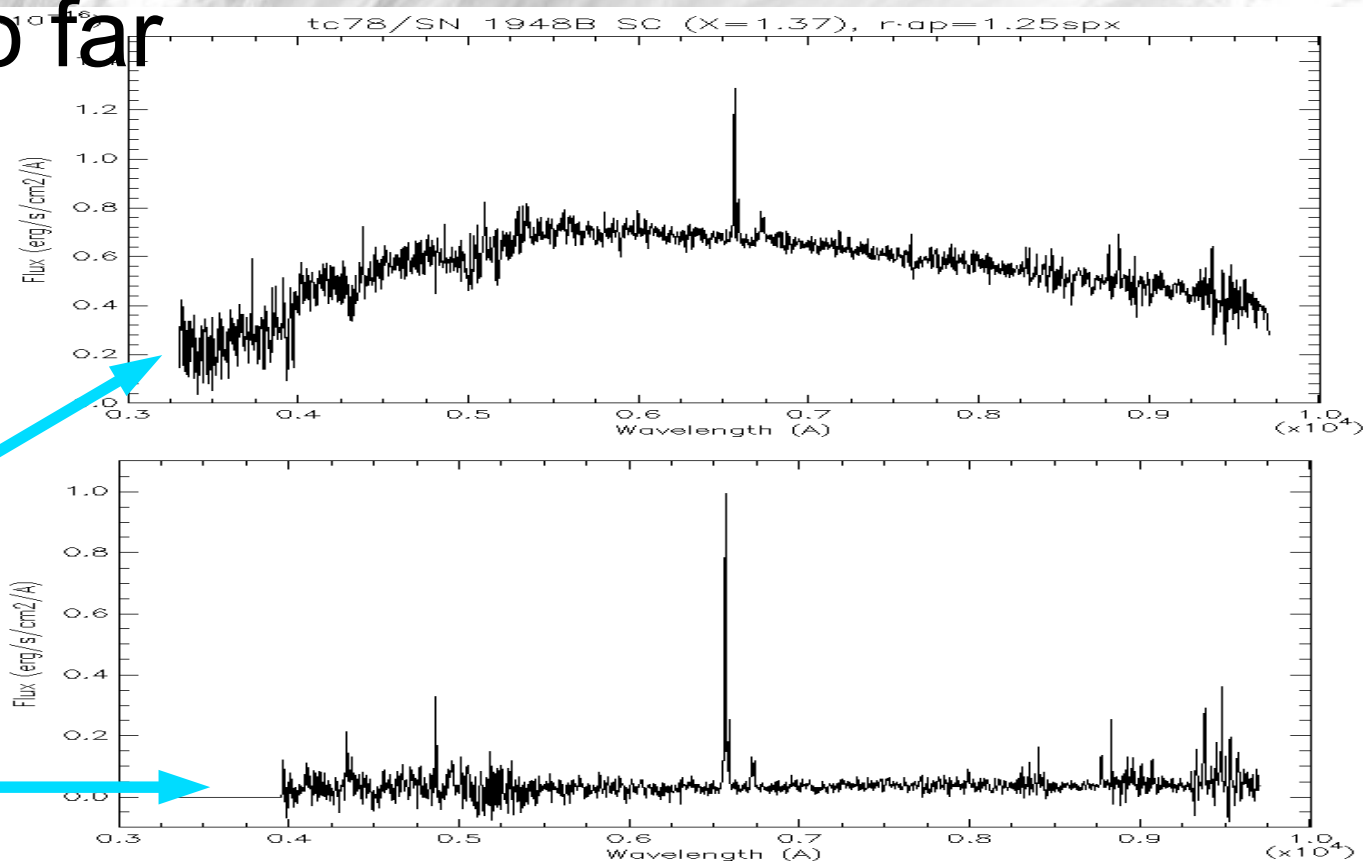
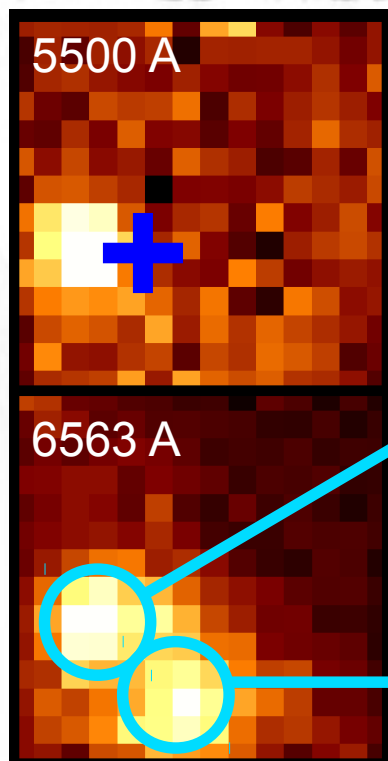


On-going work with UH88/SNIFS

- IFU observations of SN host star clusters
- Compare observed cluster SED with SSP model
- Determine host cluster age/metallicity → SN progenitor mass/metallicity
- ~20 targets observed
- SN-cluster physical association check: ANIR imaging



SNIFS results so far



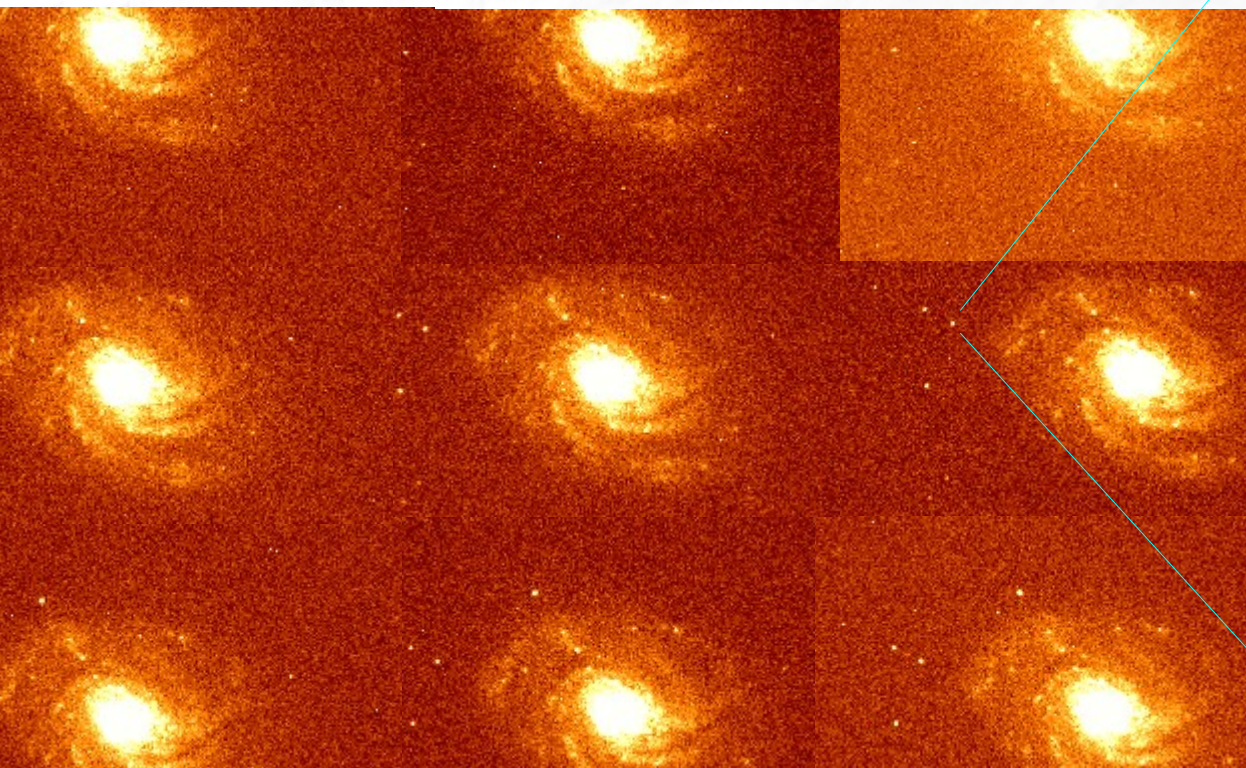
ANIR S11A observation

Date	Target	SN	Filters	t_exp	Seeing
2011.4.24	NGC 3810	97dq, 00ew	<i>BVRJHKs</i>	18x60s	~1.0" (V)
2011.4.28	NGC 2848	94L	<i>BVRJHKs</i>	11x50s	~1.0" (V)
2011.5.11	NGC 5236 (A)	23A	<i>J, Paβ</i>	13x90s, 22x120s	~1.4" (J)

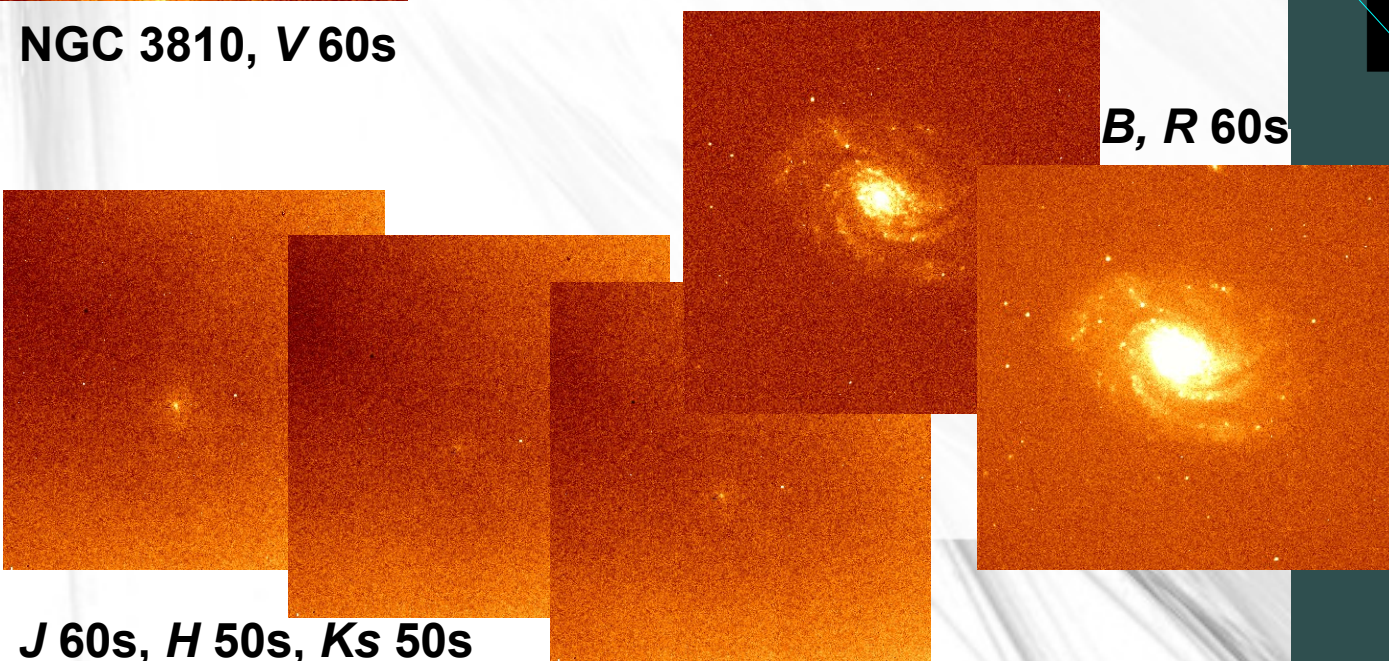
Target	RA2000	Dec2000
**NGC 2848	09 20 10	-16 31 34
NGC 2997	09 45 40	-31 11 27
IC 2627	11 09 53	-23 43 35
**NGC 3627	11 20 15	+12 59 30
**NGC 3810	11 40 59	+11 28 17
**NGC 4038	12 01 53	-18 51 54
NGC 4254	12 18 49	+14 25 07
**NGC 4303	12 21 55	+04 28 20
*NGC 4321	12 22 55	+15 49 22
NGC 4651	12 43 43	+16 23 36
NGC 4653	12 43 51	-00 33 40
NGC 5161	13 29 14	-33 10 30
**NGC 5236A (+Paβ)	13 37 04	-29 51 40
**NGC 5236B (+Paβ)	13 36 56	-29 53 09
*NGC 5468	14 33 24	-05 27 13
NGC 5668	14 33 24	+04 27 02
NGC 6118	16 21 49	-02 16 58
NGC 6744	19 09 45	-63 51 22

S11A observed
(3 of 18)

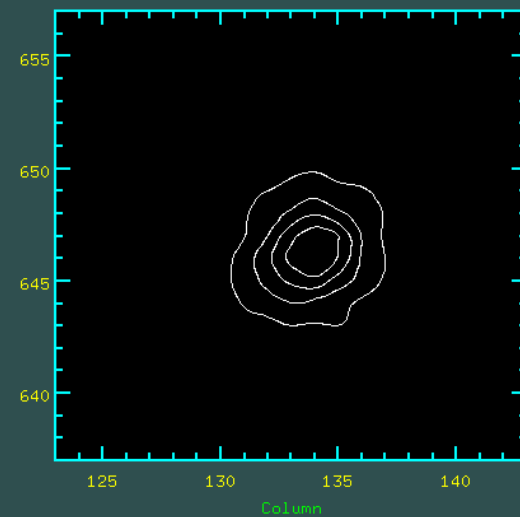
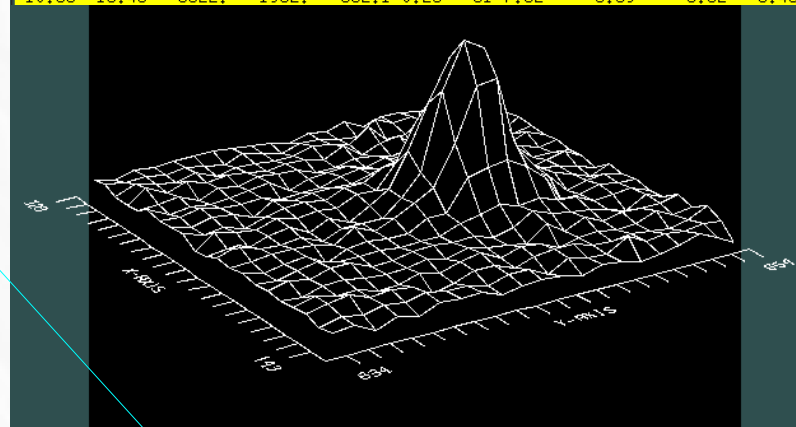
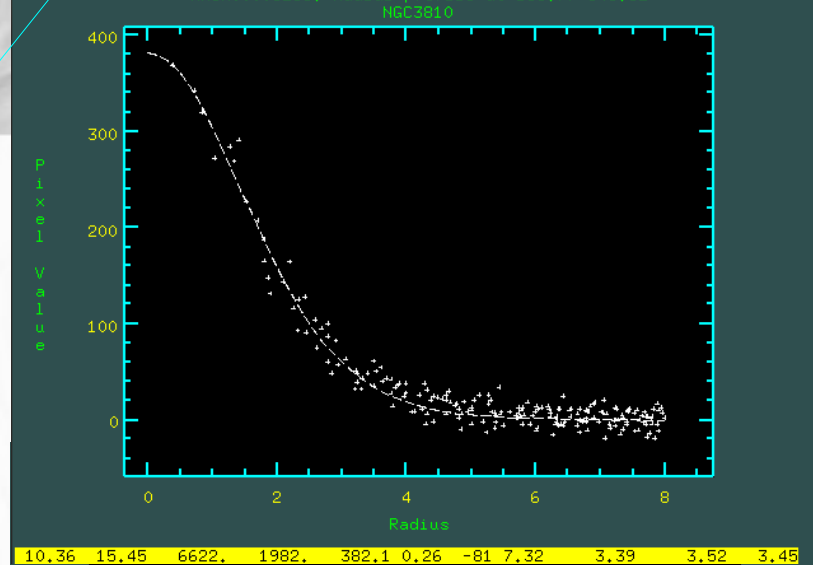
ANIR S11A result

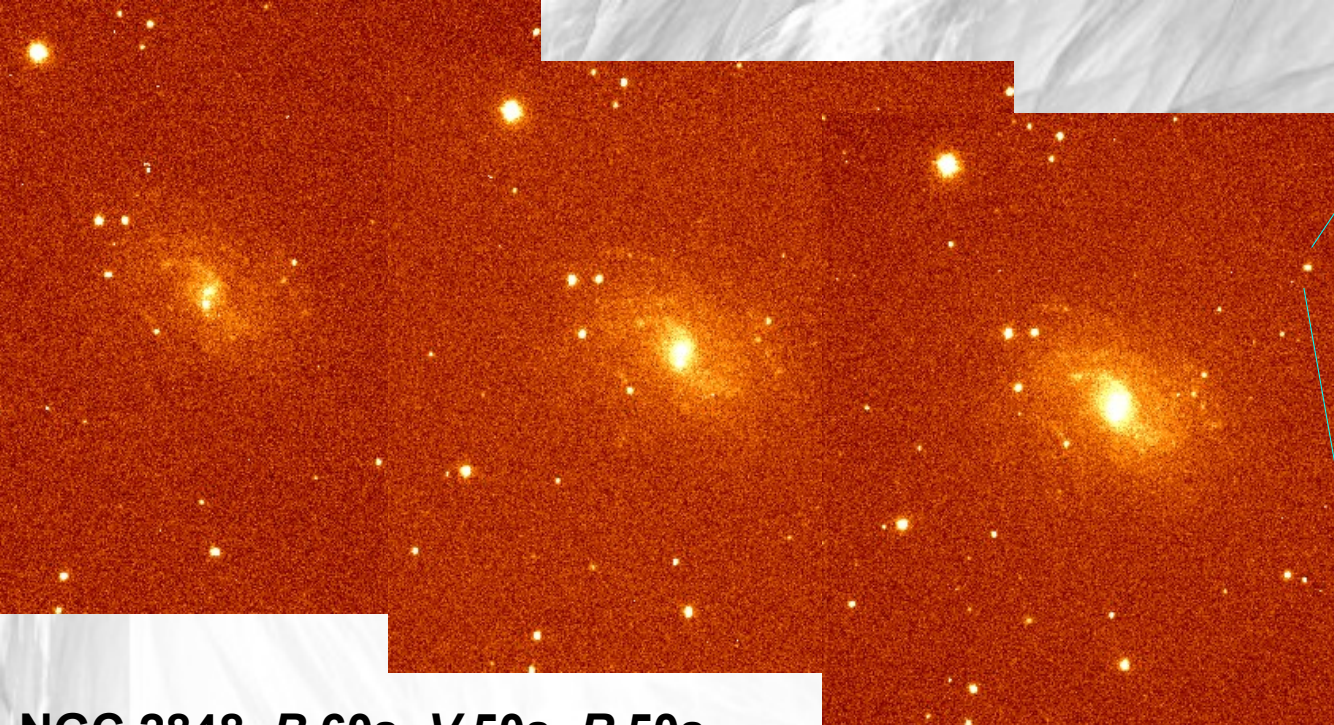


NGC 3810, V 60s

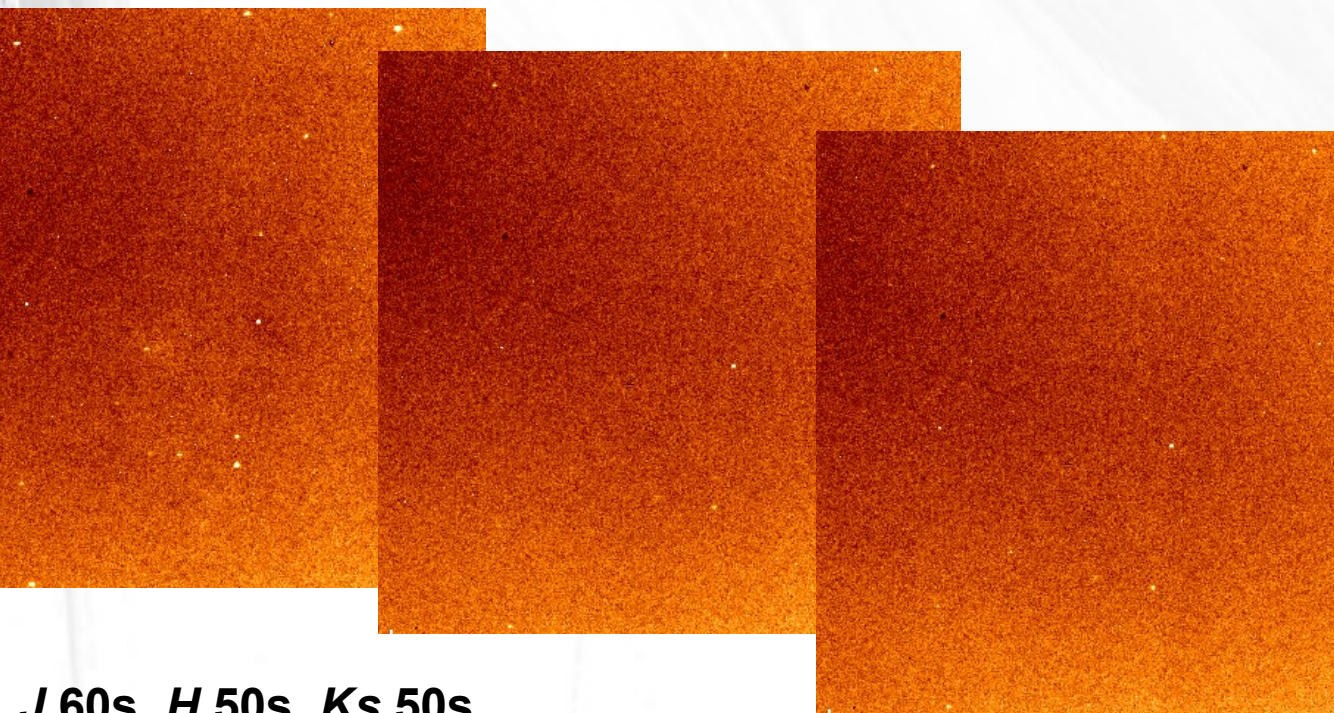


B, R 60s

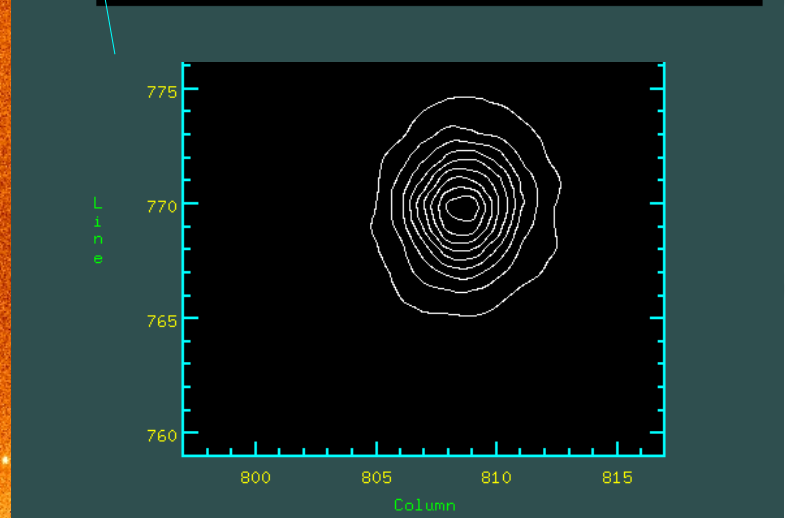
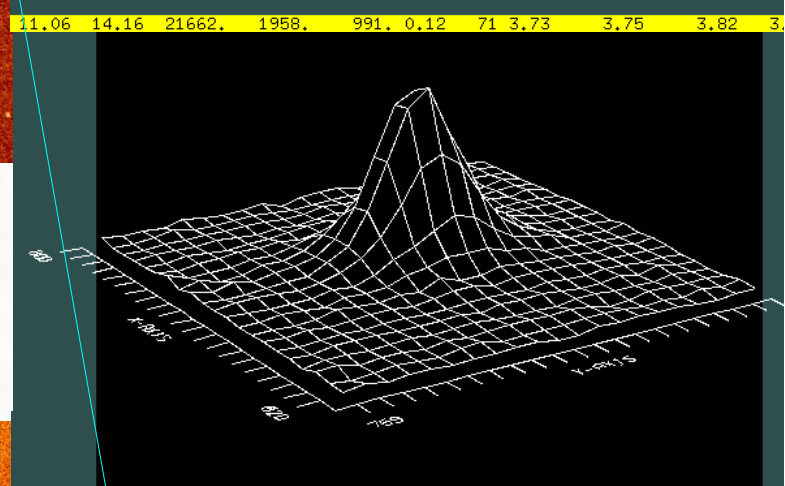
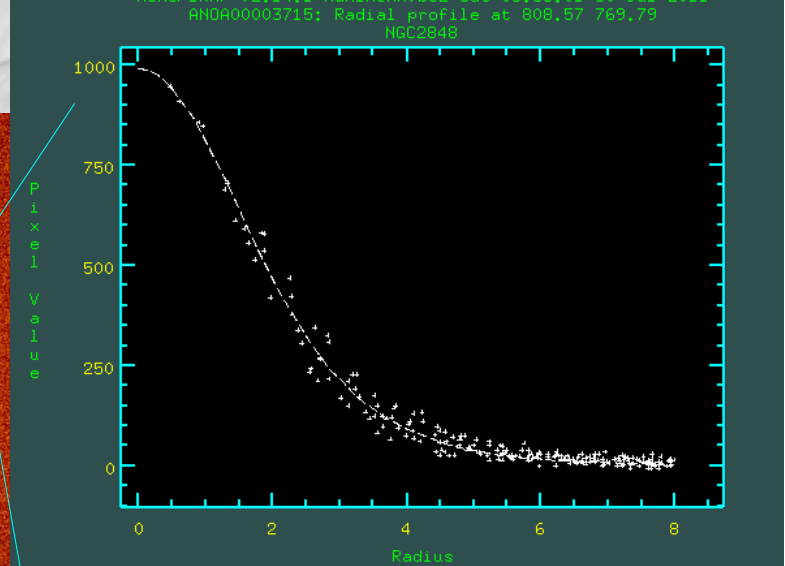


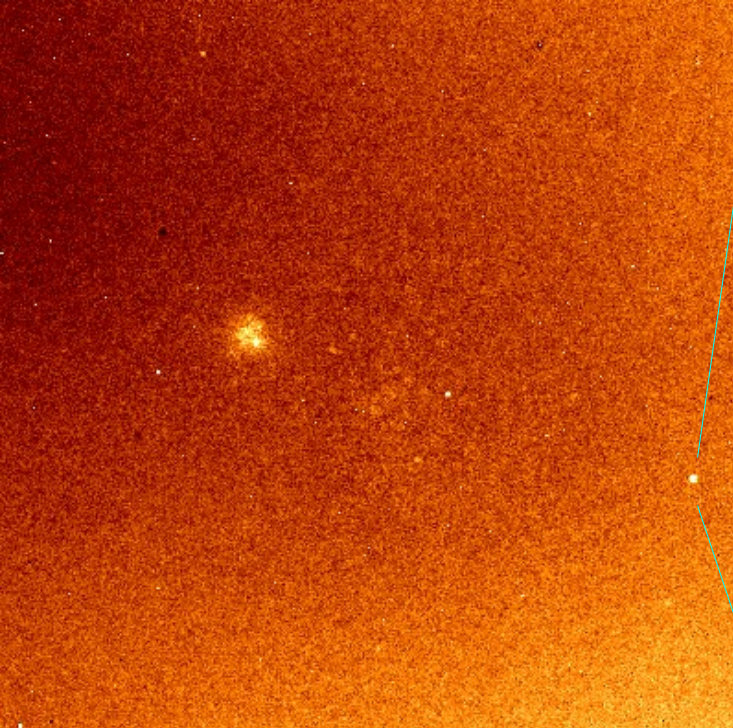


NGC 2848, *B* 60s, *V* 50s, *R* 50s



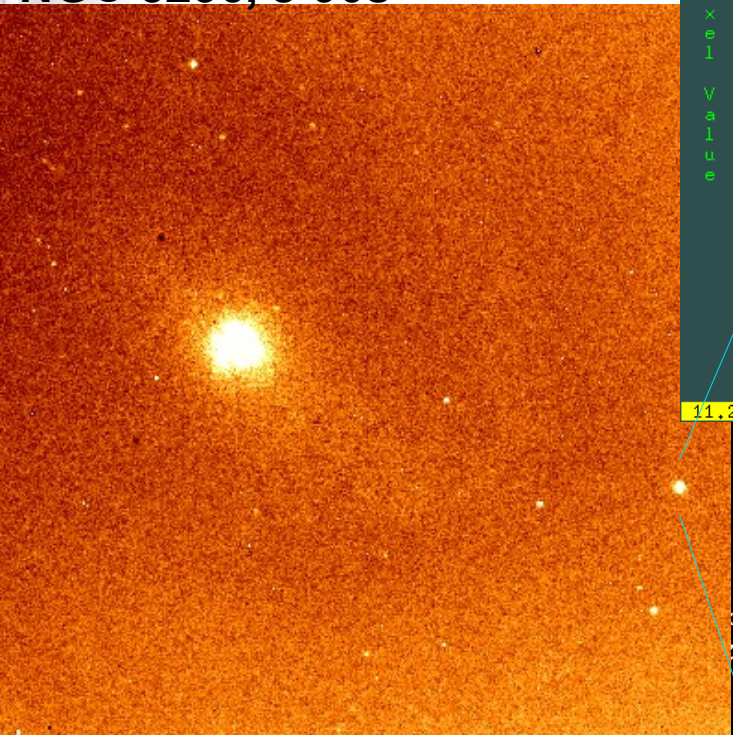
***J* 60s, *H* 50s, *Ks* 50s**



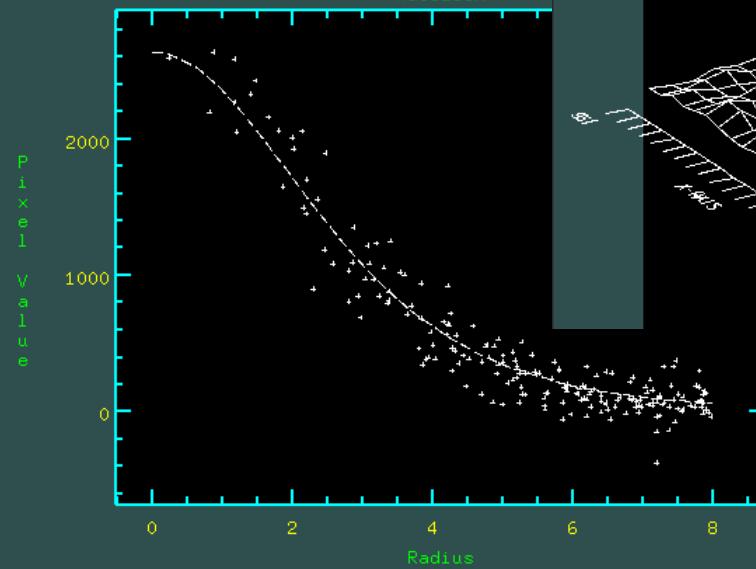


NGC 5236, Pa β 120s

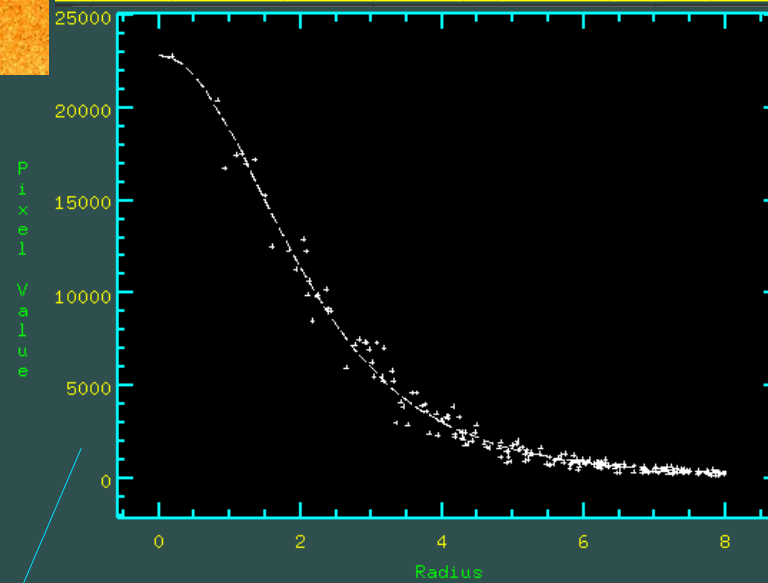
NGC 5236, J 90s



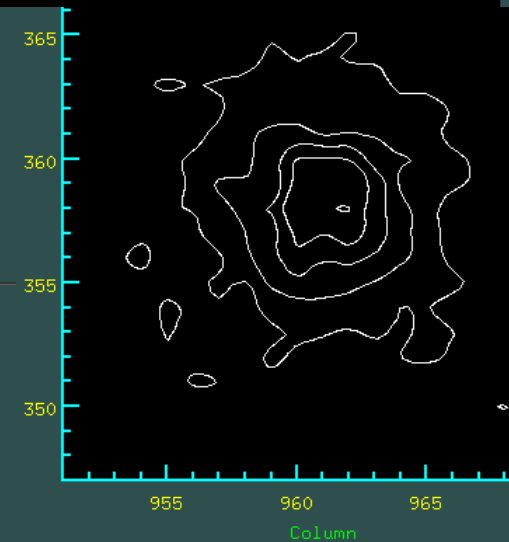
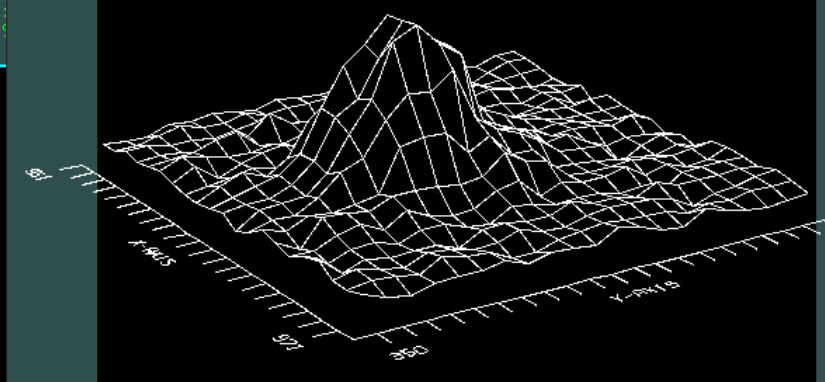
HEAD/IRAF V2.14.1 hanin@hkv632 Thu 15:
ANIR00024248:Radial profile at
NGC5236A



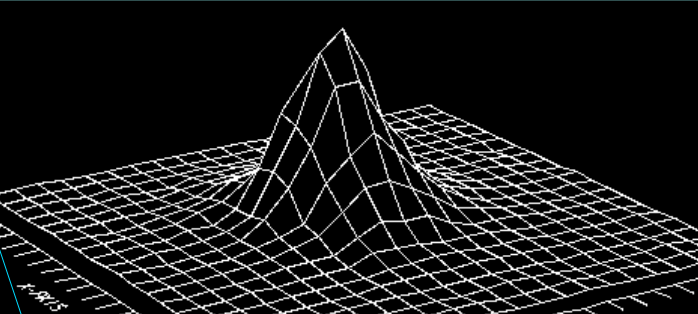
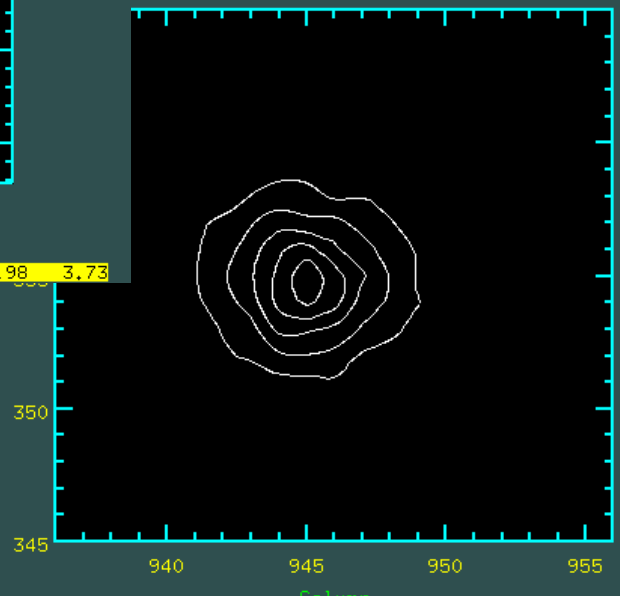
15.53 12.47 102718. 1054. 2639. 0.22 73 3.00 5.22 5.19 5.19



11.20 10.57 589504. 1005. 22814. 0.05 -15 2.27 3.97 3.98 3.73

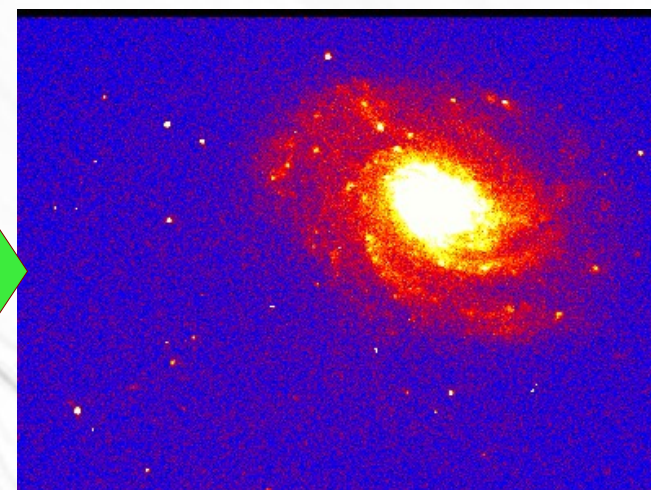
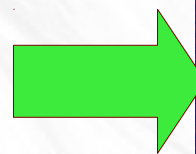
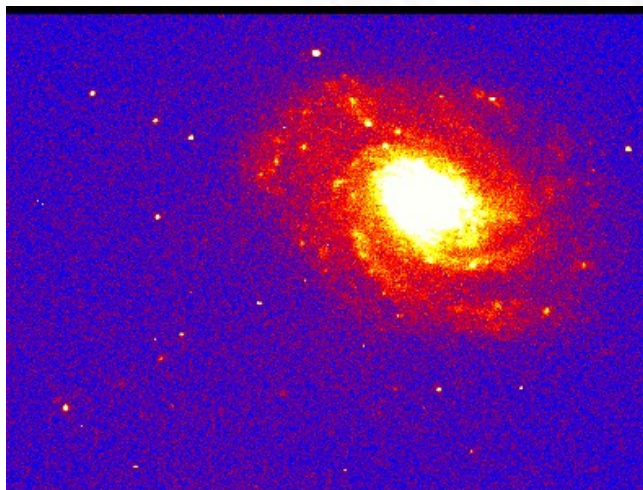
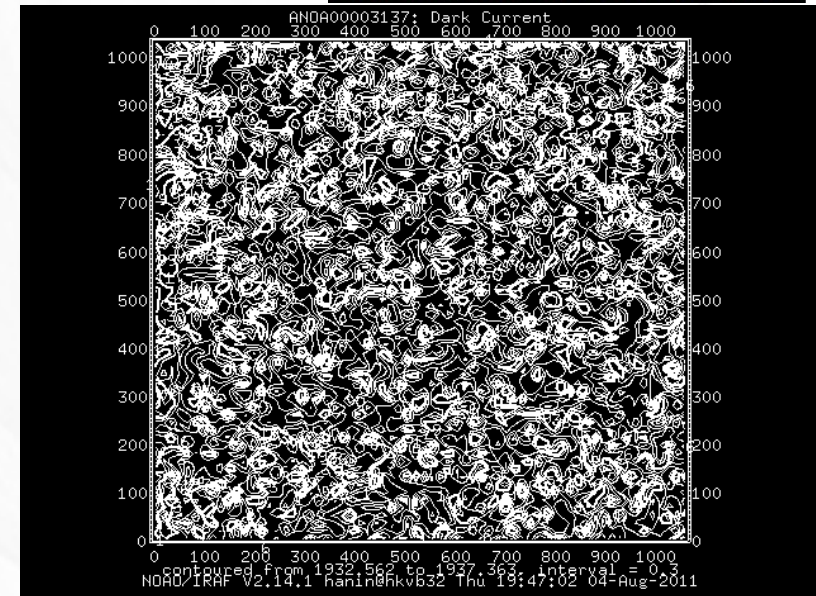
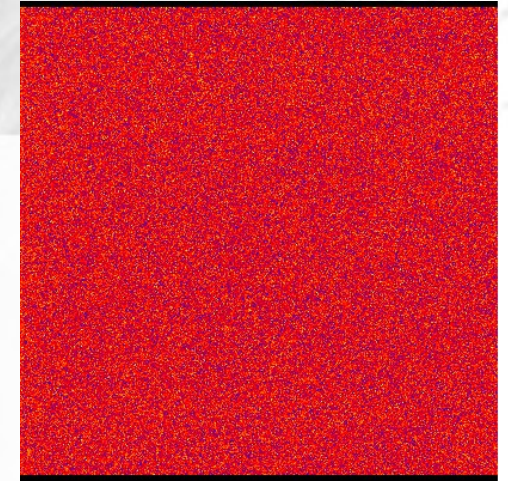
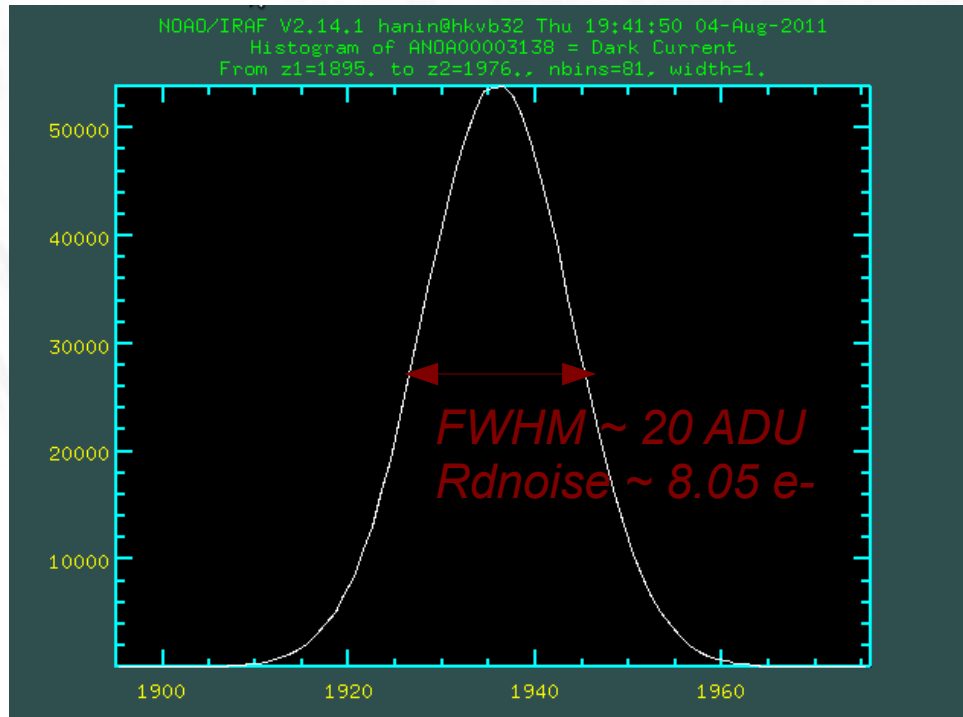


CONSTRUCTED FROM 101. TO 20701. INCREAS = 40
NGC5236A



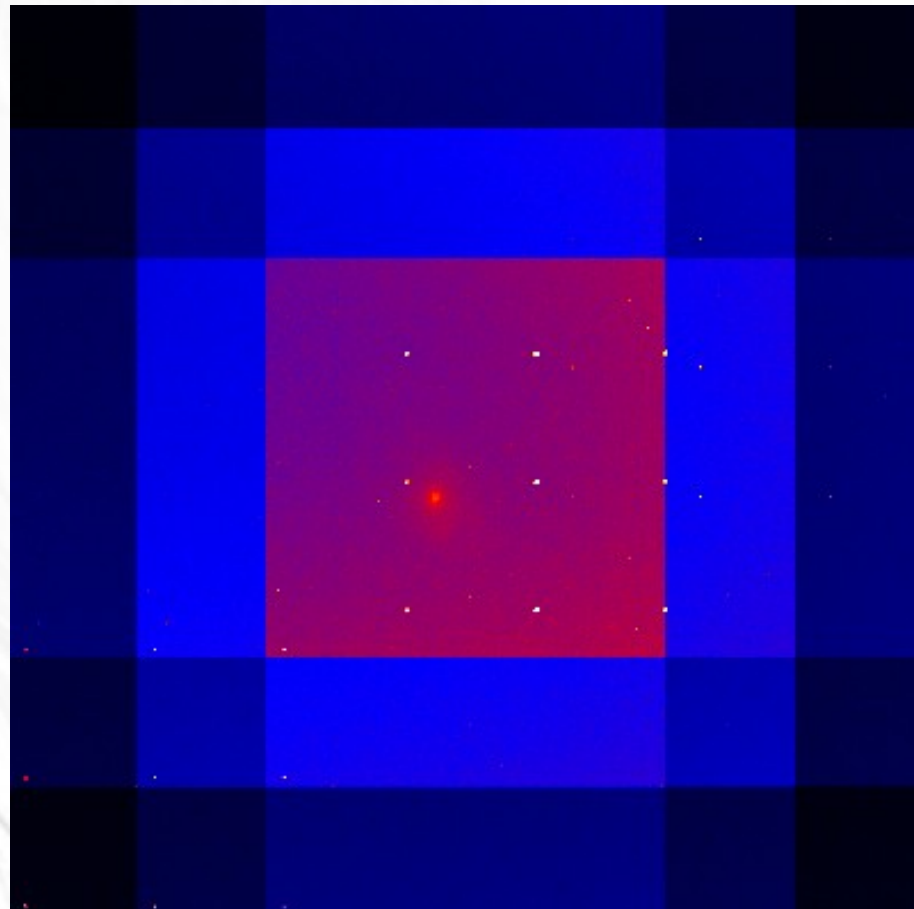
Data reduction (in IRAF)

- Created master bias frame (median)
- Bias subtraction only

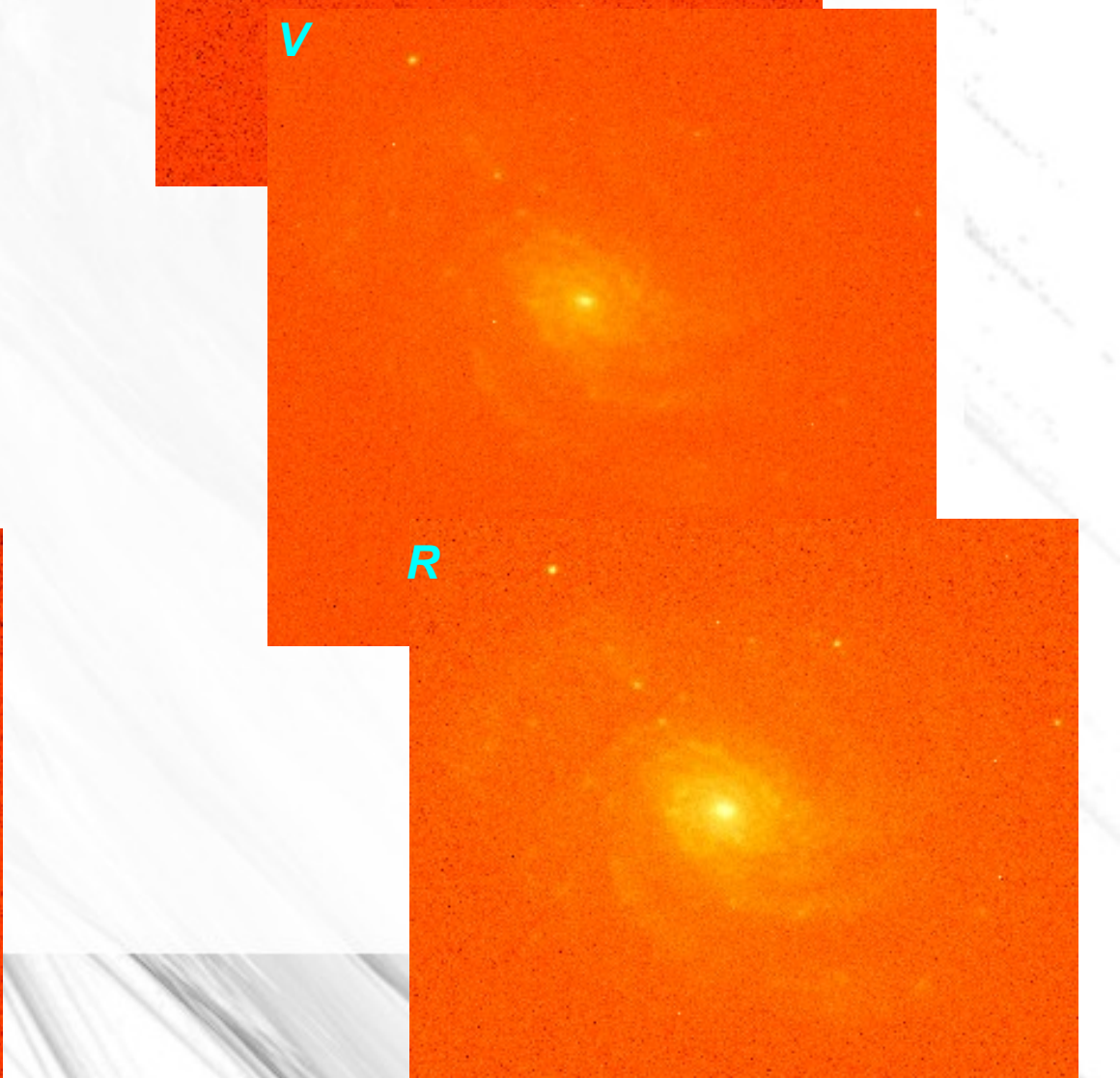
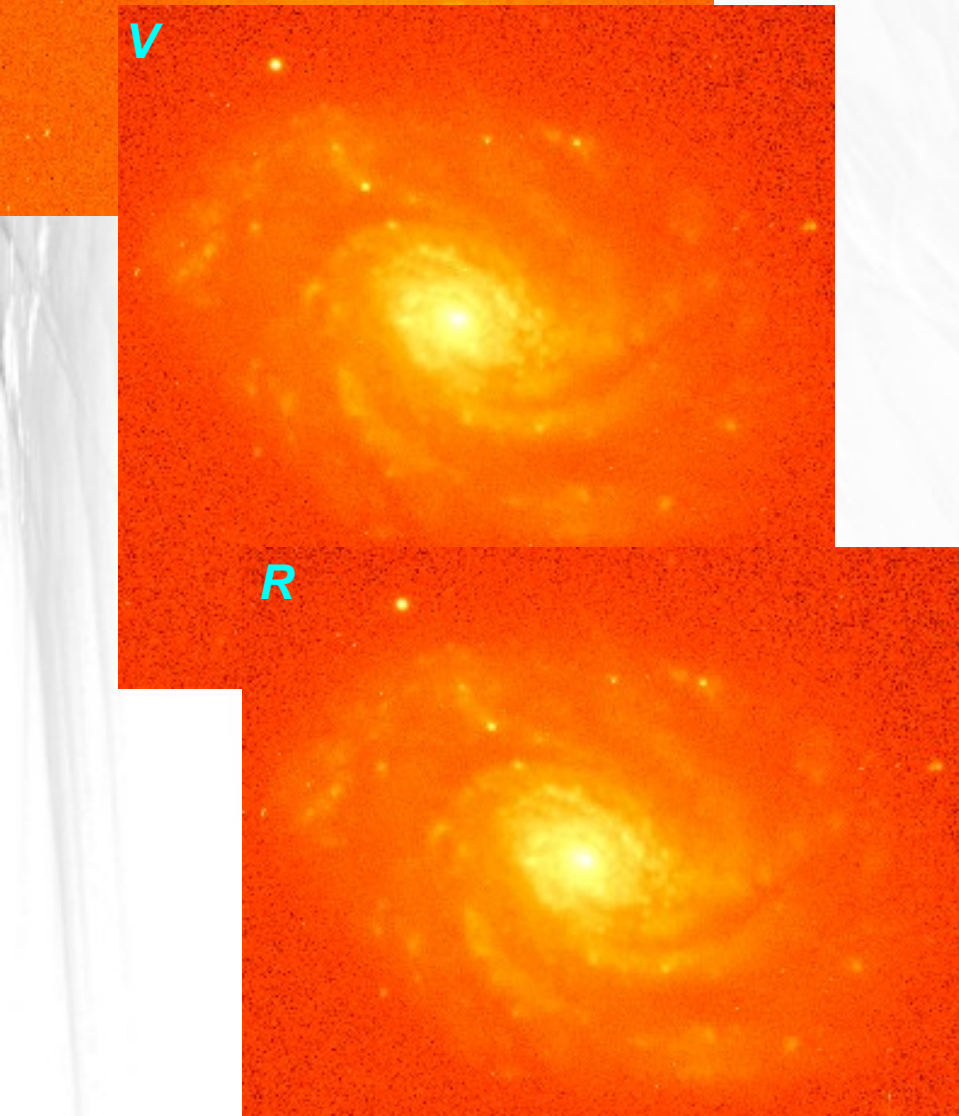
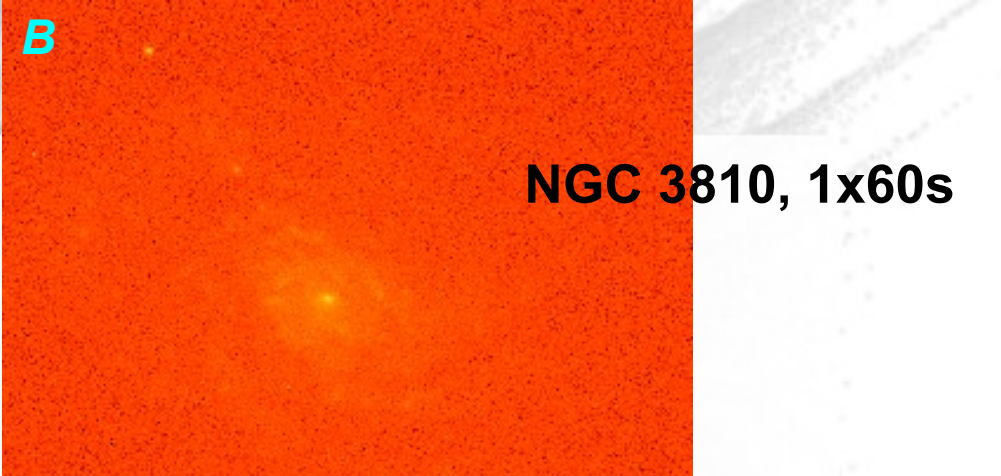
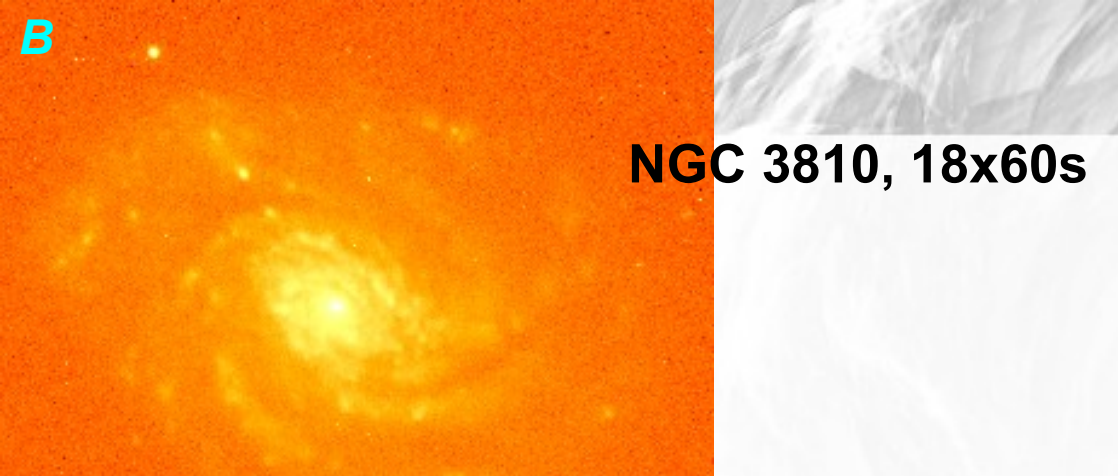


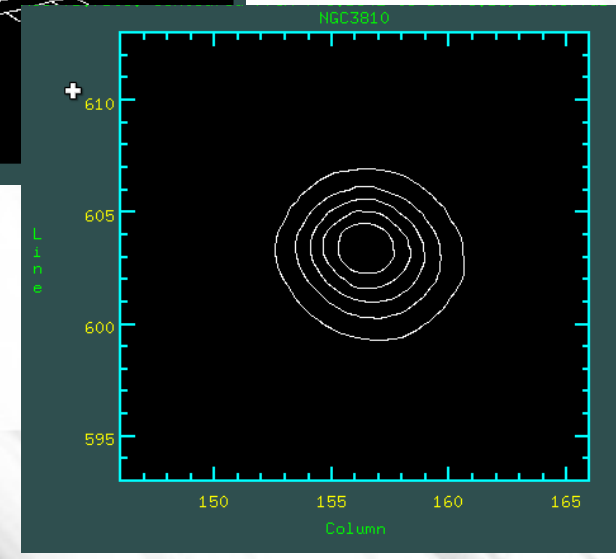
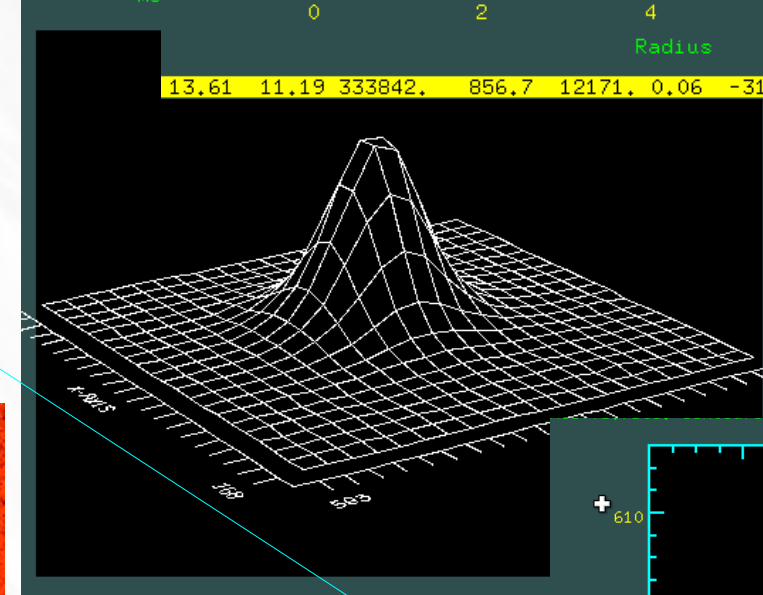
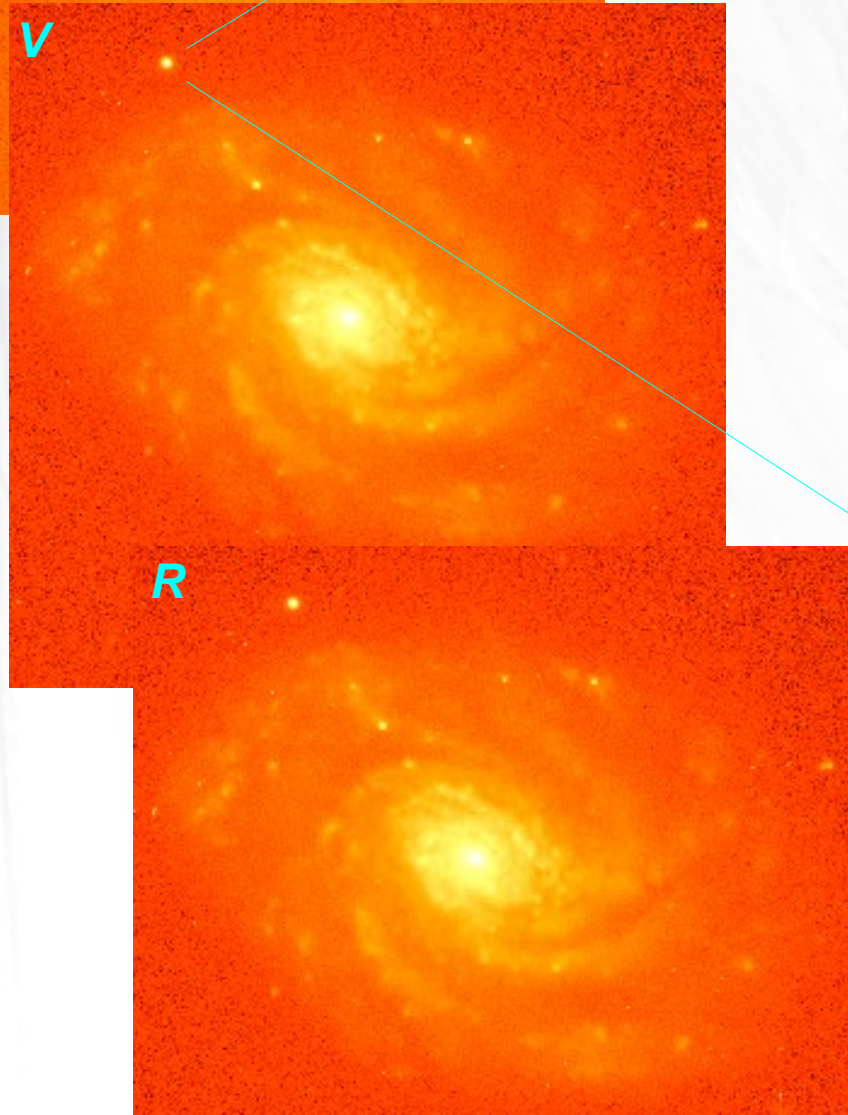
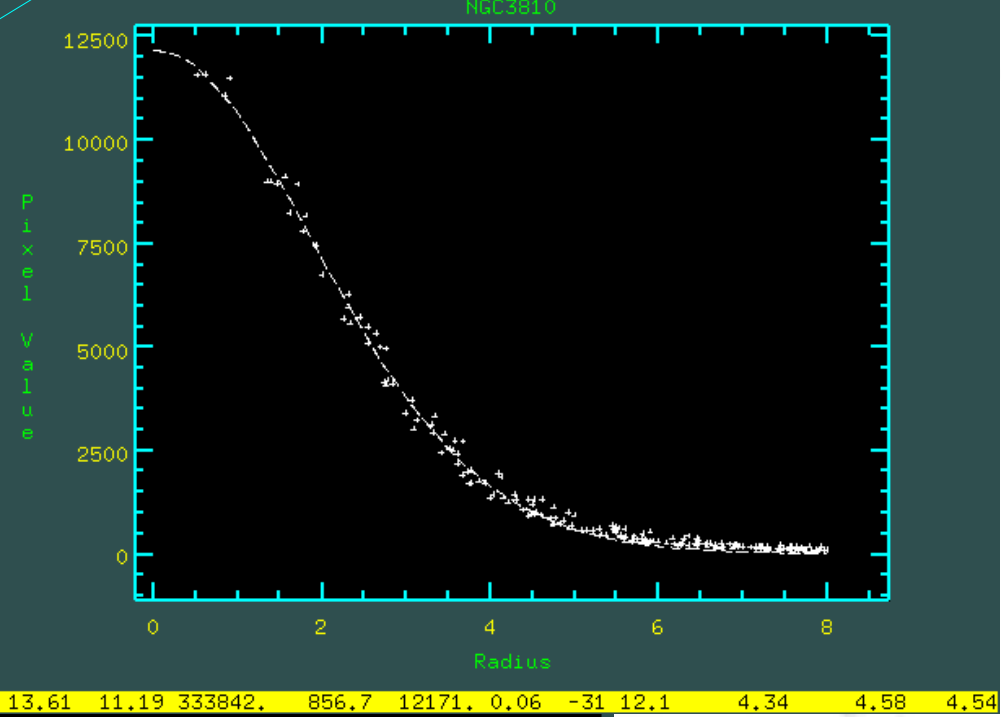
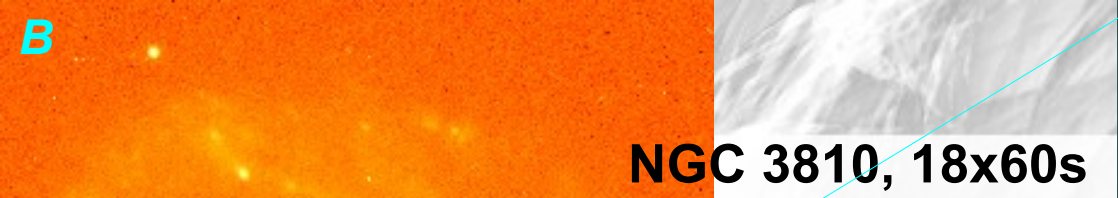
Stacking

- IRAF, by WCS: `images.immatch.wregister`, `imcombine`
- Incorrect WCS in optical? → use `imalign`



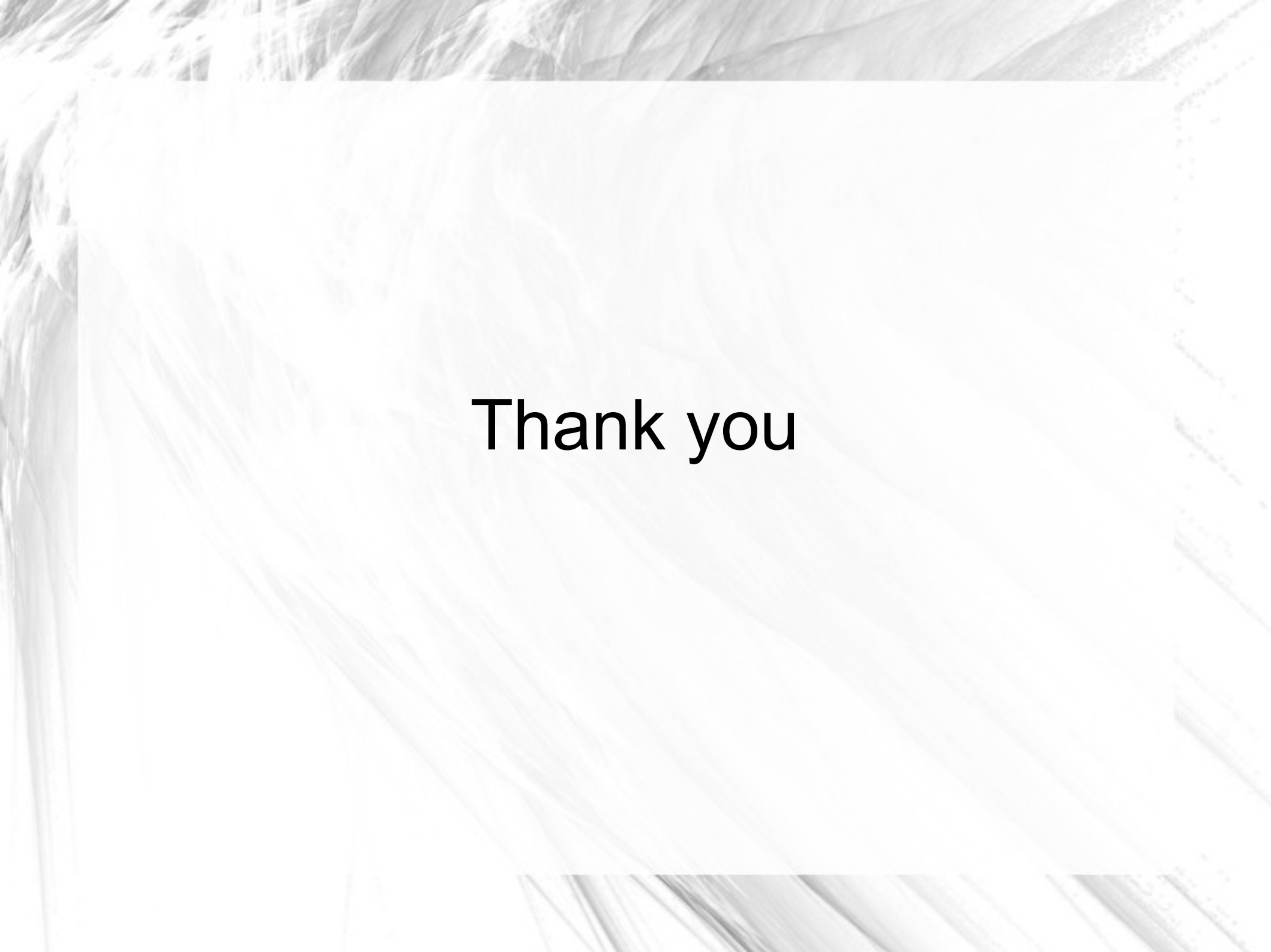
NGC 3810, *J* 9x60s





Proposed S11B observation

- Essentially the same as S11A
 - Deep *BVRJHK* imaging of nearby SN hosts
- Other targets (~3-5) for S11B



Thank you