



Disentangling the evolutionary paths of Supernova Remnants: observational evidence of (non) multi-wavelength emission

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MOTIVATION

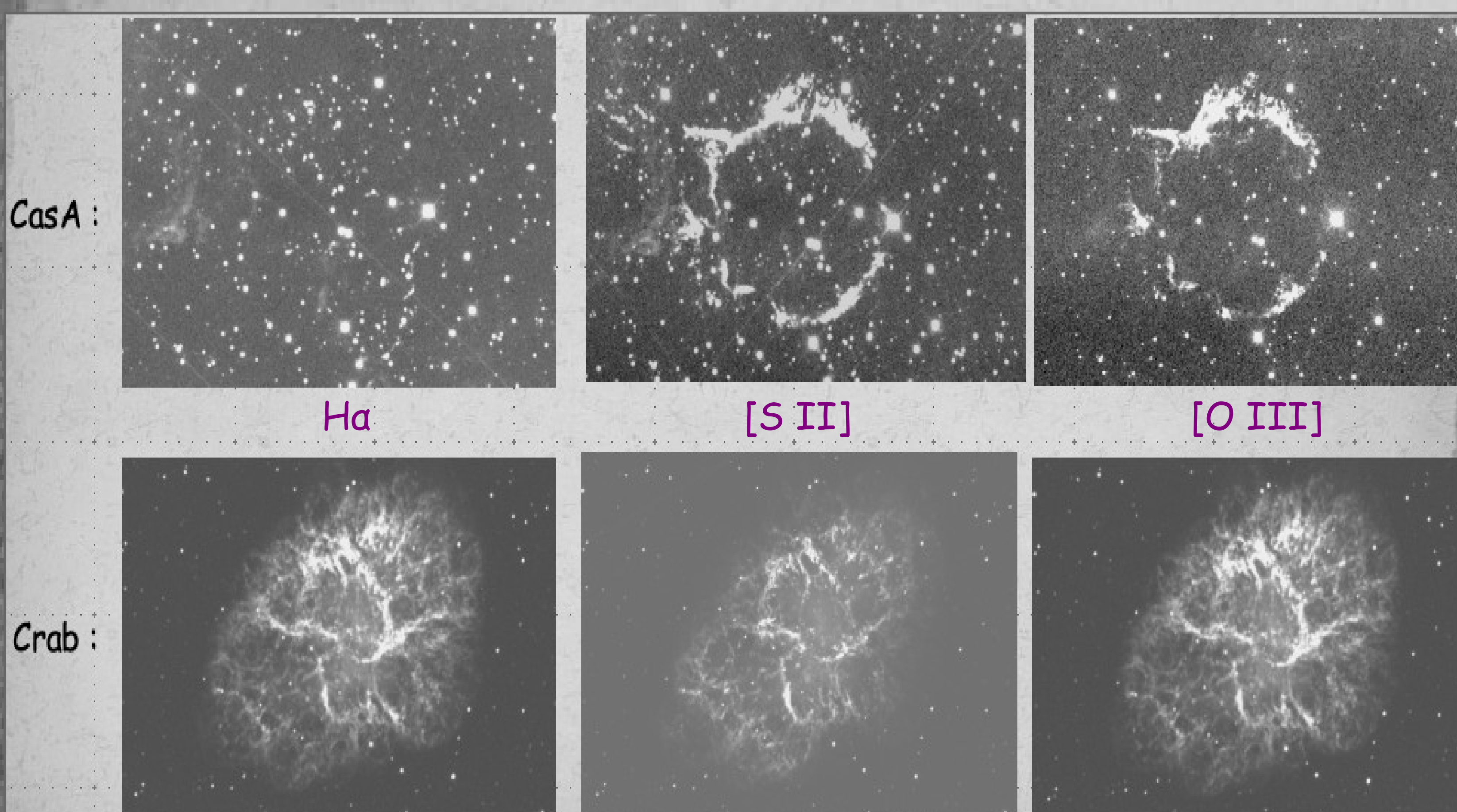
- Provide *for the first time* an observational framework for understanding the evolution of SNRs based on the Galactic SNR *population*
- Investigate SNR *evolution* through multi-wavelength emission as a function of age and environment
- Test theoretical models.

OBJECTIVE

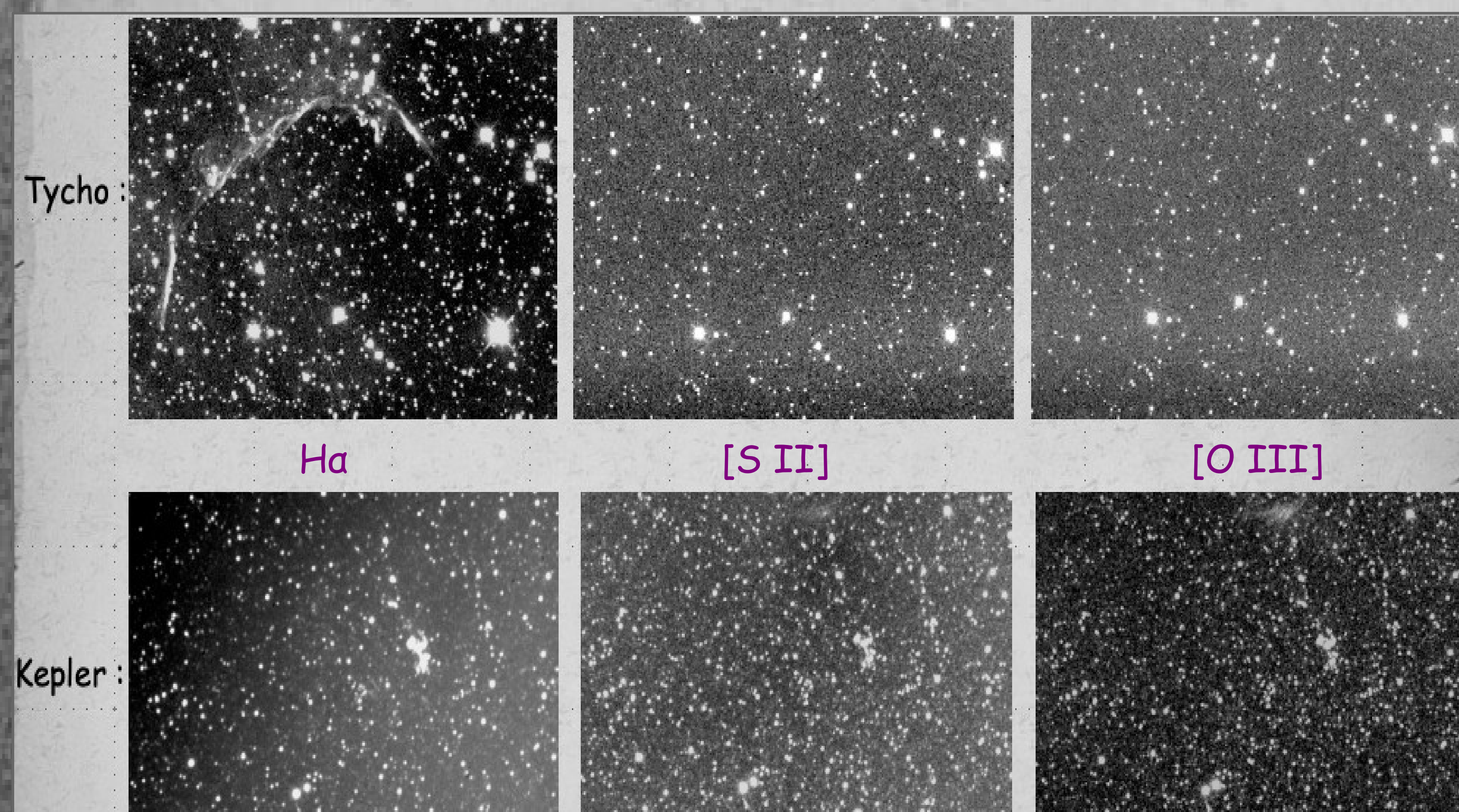
Optical coverage of all Galactic SNRs in narrow-band filters of SNRs' interest (i.e. H α , [S II], [O III], H β) since despite the wealth of data, only ~35% of Galactic SNRs had been observed in the optical band so far.



The presented sample is the first of a series dealing with the optical study of X-ray emitting, Galactic SNRs (29 objects)



	Age (yrs)	log(H α)	log[SII]	[SII]/H α	L x (0.3-10.0 keV)
CasA:	316-352	-17.07 \pm 18.57	-17.93 \pm 20.16	0.14 \pm 2 \times 10 ⁵	2.79e+37
Kepler:	417	-17.66 \pm 20.23	-18.07 \pm 19.89	0.39 \pm 4 \times 10 ⁵	1.53e+36
Tycho:	449	-14.67 \pm 18.04	-15.63 \pm 19.58	0.11 \pm 0.0	1.37e+36
3C58:	830	-17.00 \pm 19.68	-17.86 \pm 19.86	0.14 \pm 0.0	3.30e+34
Crab:	967	-	-	-	1.37e+37

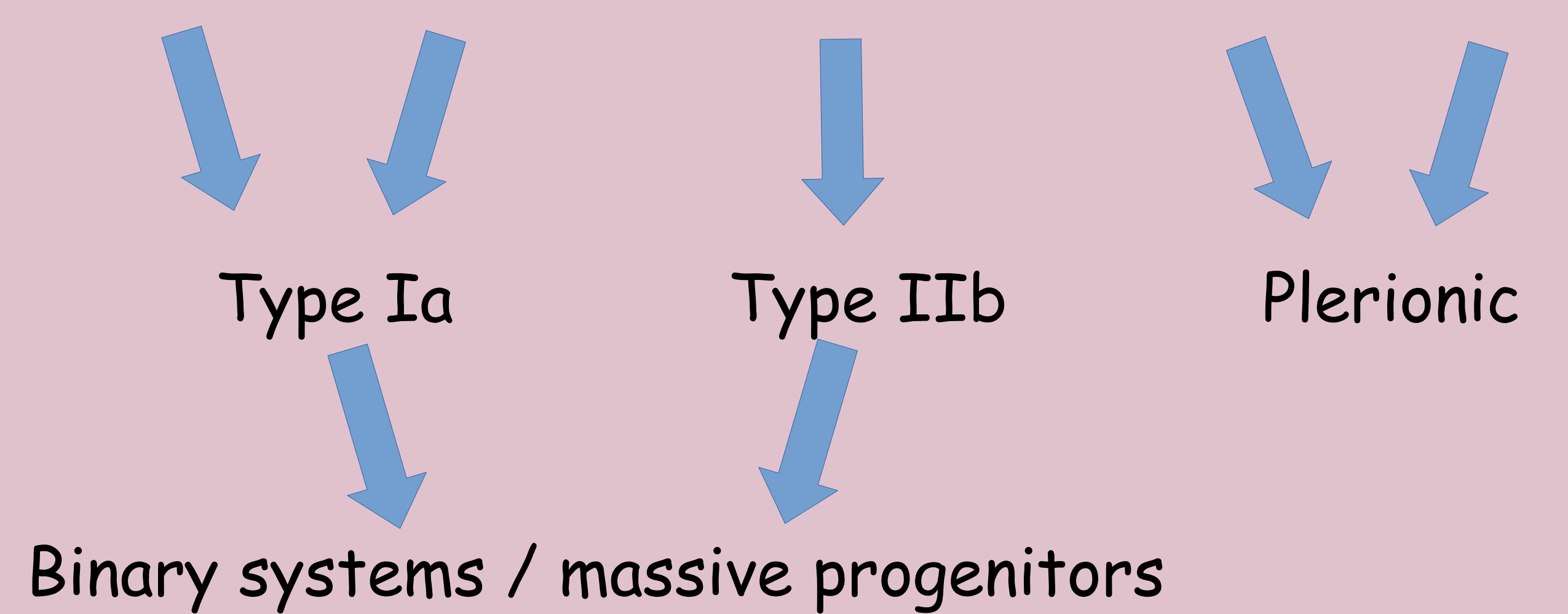


RESULTS

(Leonidaki et al., submitted)

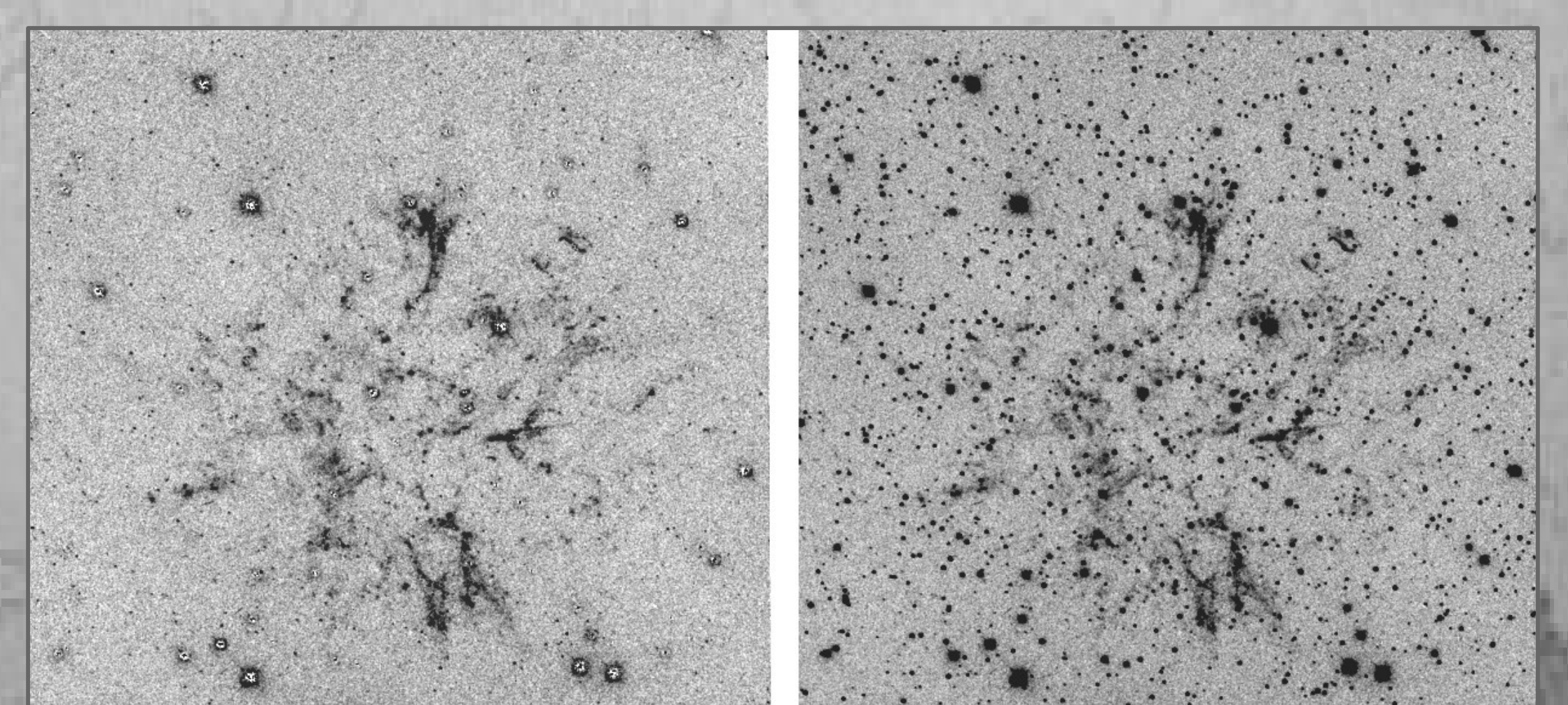
- Integrated H α , [S II], [O III] fluxes.
- Only 5/29 of the X-ray emitting SNR sample emit in the optical

Tycho Kepler CasA 3C58 Crab



Dense stellar winds and/or wind-driven bubbles modify/transform substantially the CSM

Possible explanation of optical emission in young SNRs (?)



H α image of 3C58 (G130.7+3.1)