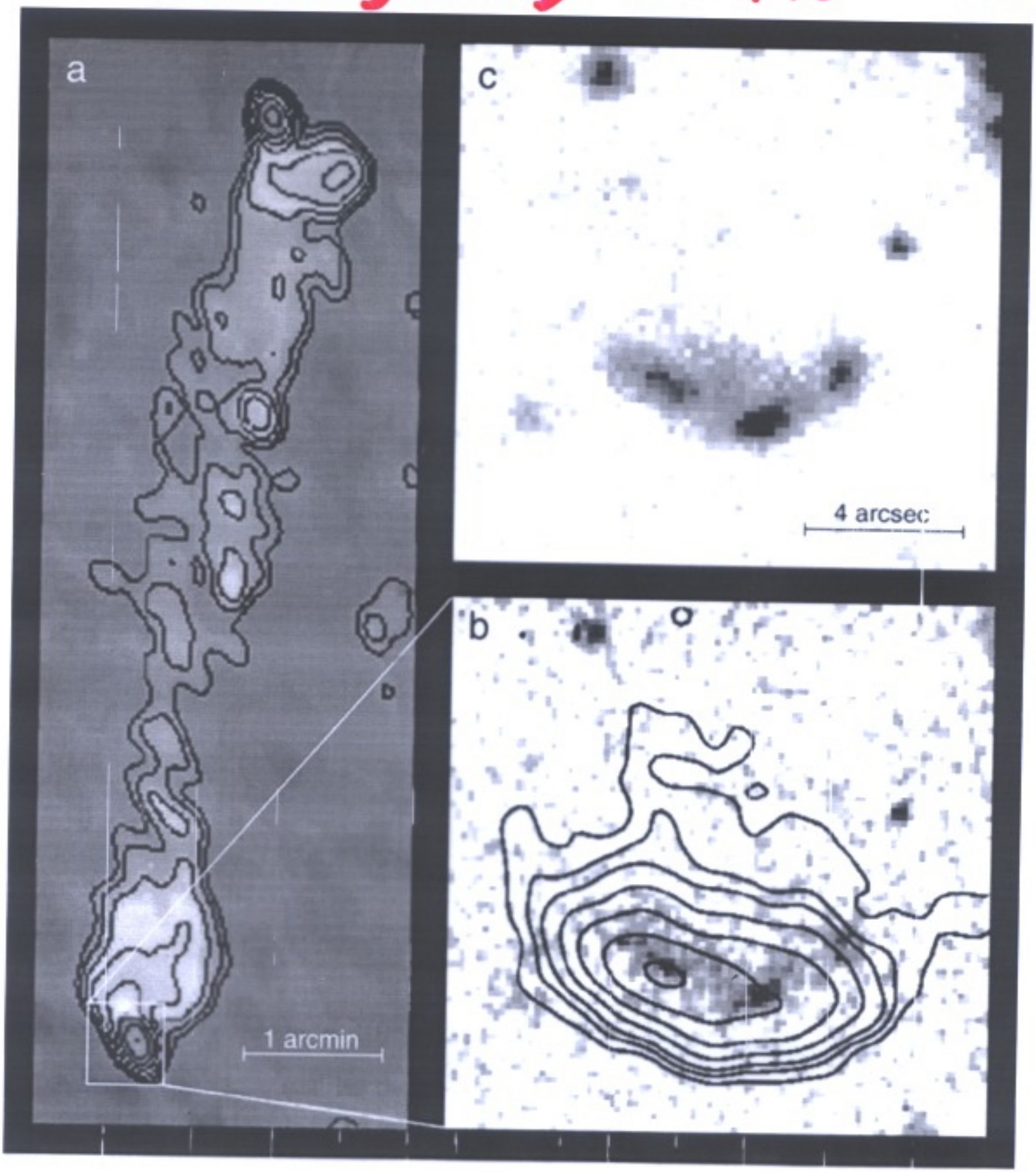
radio galaxy 3C 445

19



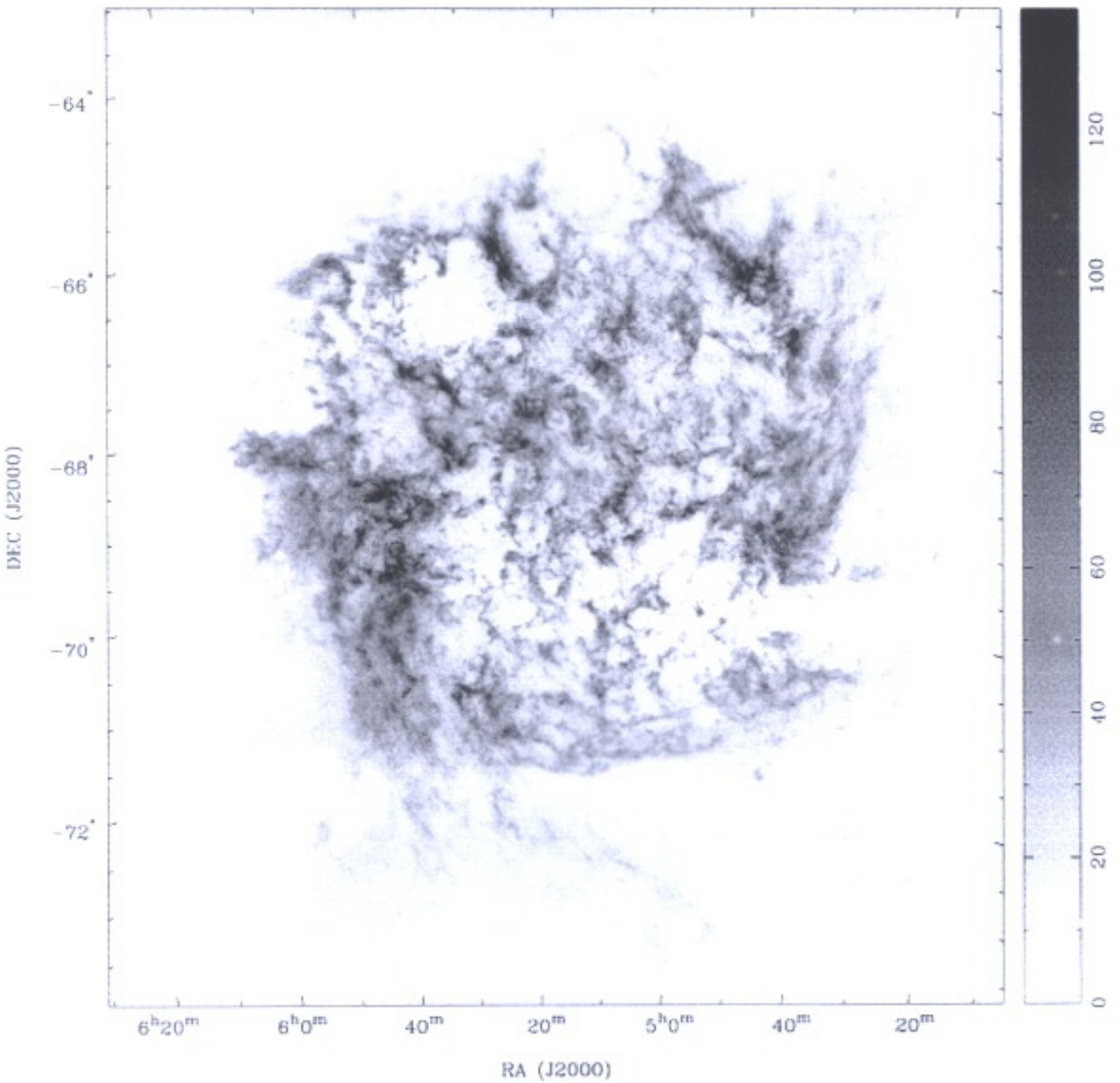
"Hot Spots" near Radio Galaxy 3C 455

ESO PR Photo 26/02 (25 November 2002)

© European Southern Observatory

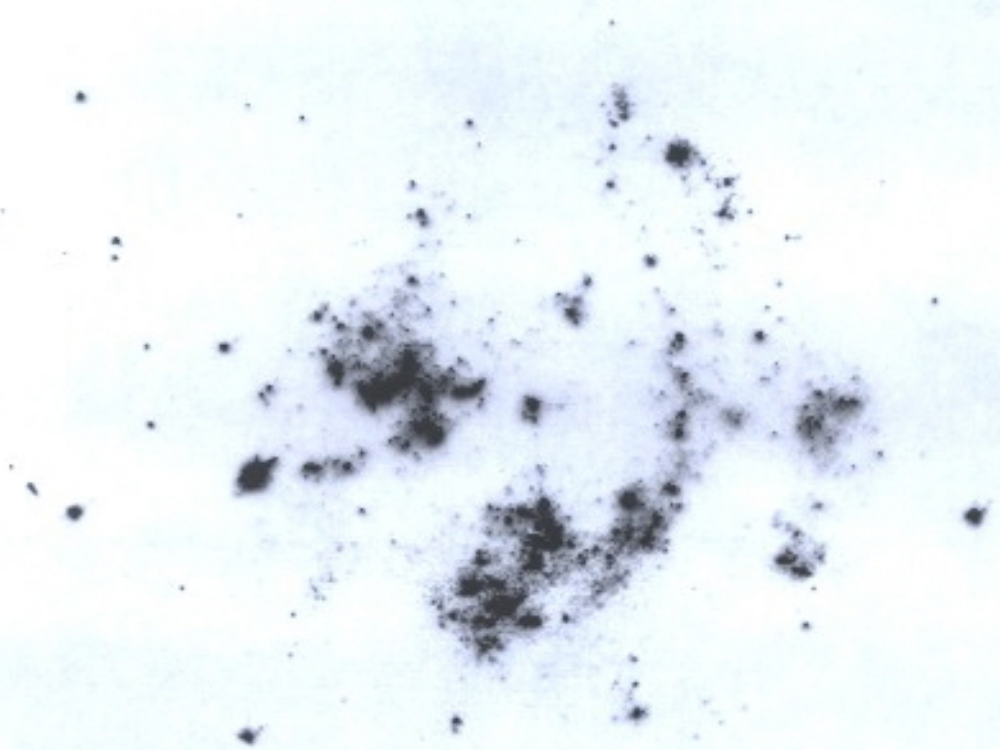
Yuri Efremov
SAI, Moscow
efremov@sai.msu.ru

LMC HI Kim et al. (1)



LMC, far UV

(2)

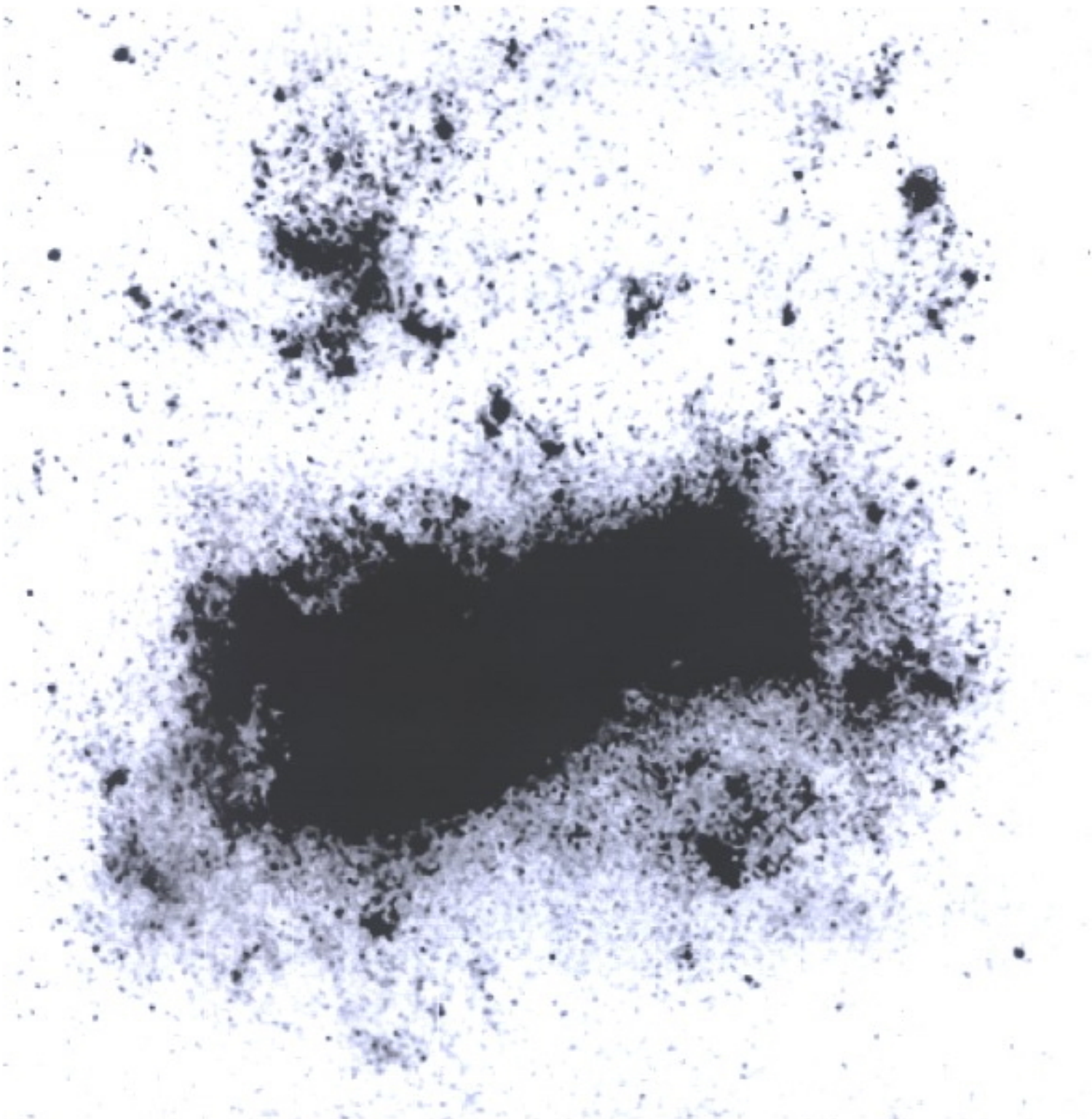


1°

N

E

LMC, pg

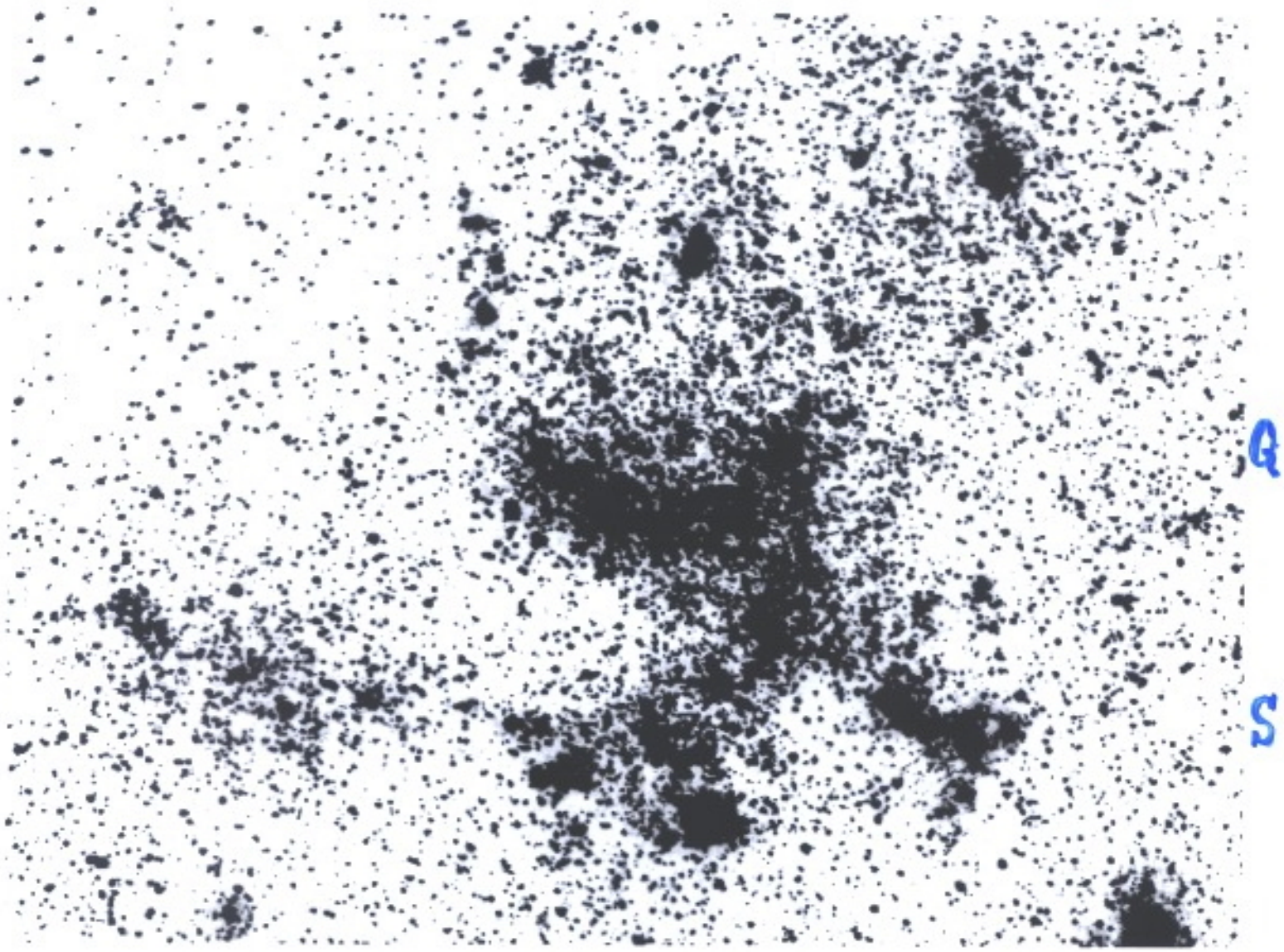


Arc-shaped complexes in LMC4 region (4)

Efremov & Elmegreen, 1998

(from central clusters ?)

Order - parts of perfect rings



Quadrant $R \approx 300$ pc $t \approx 15$ Myr

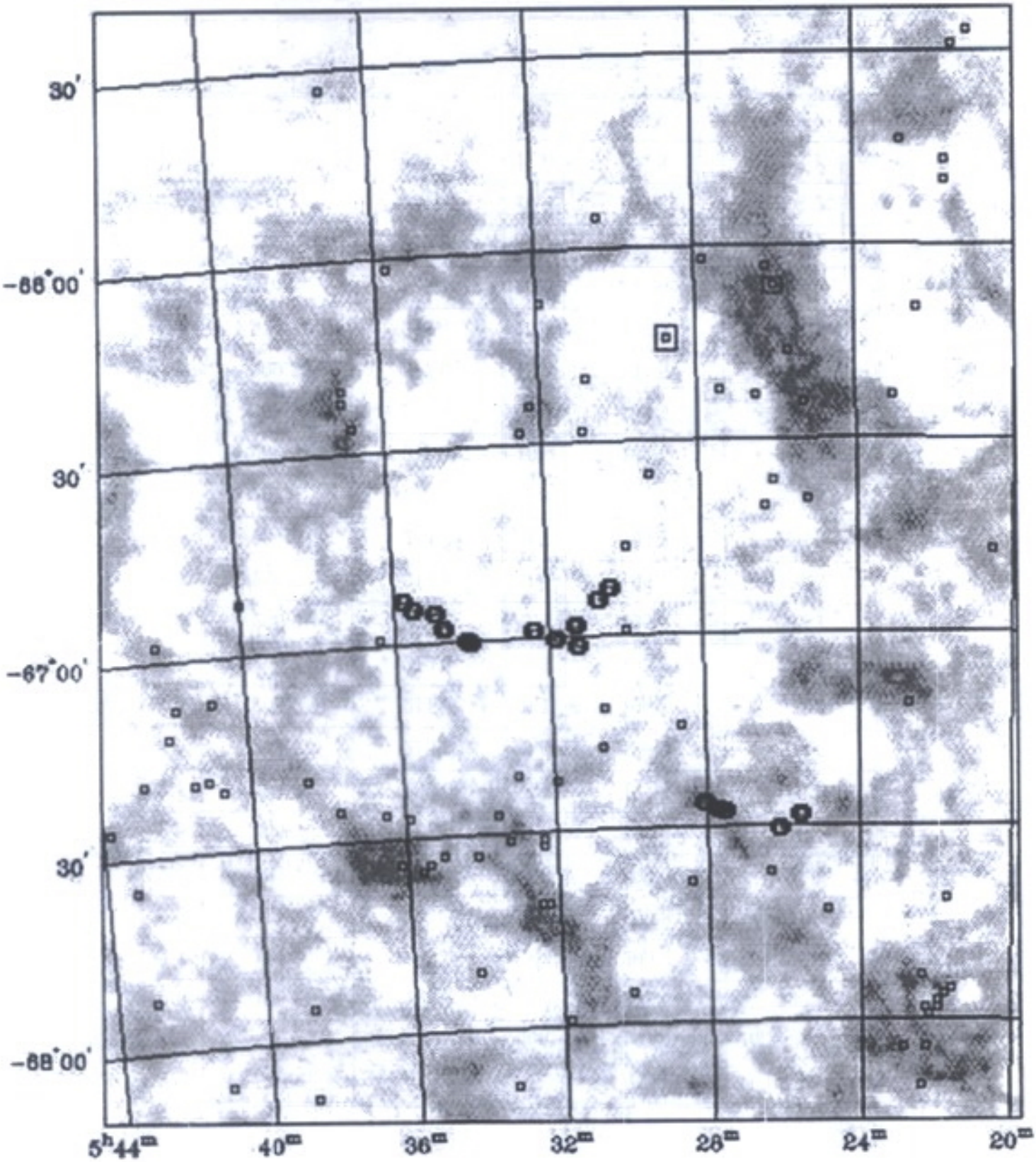
Sextant 200 pc 5 Myr

energy needed $\approx 10^{52}$ erg

Shapley's "Constellation III" is in fact Sextant

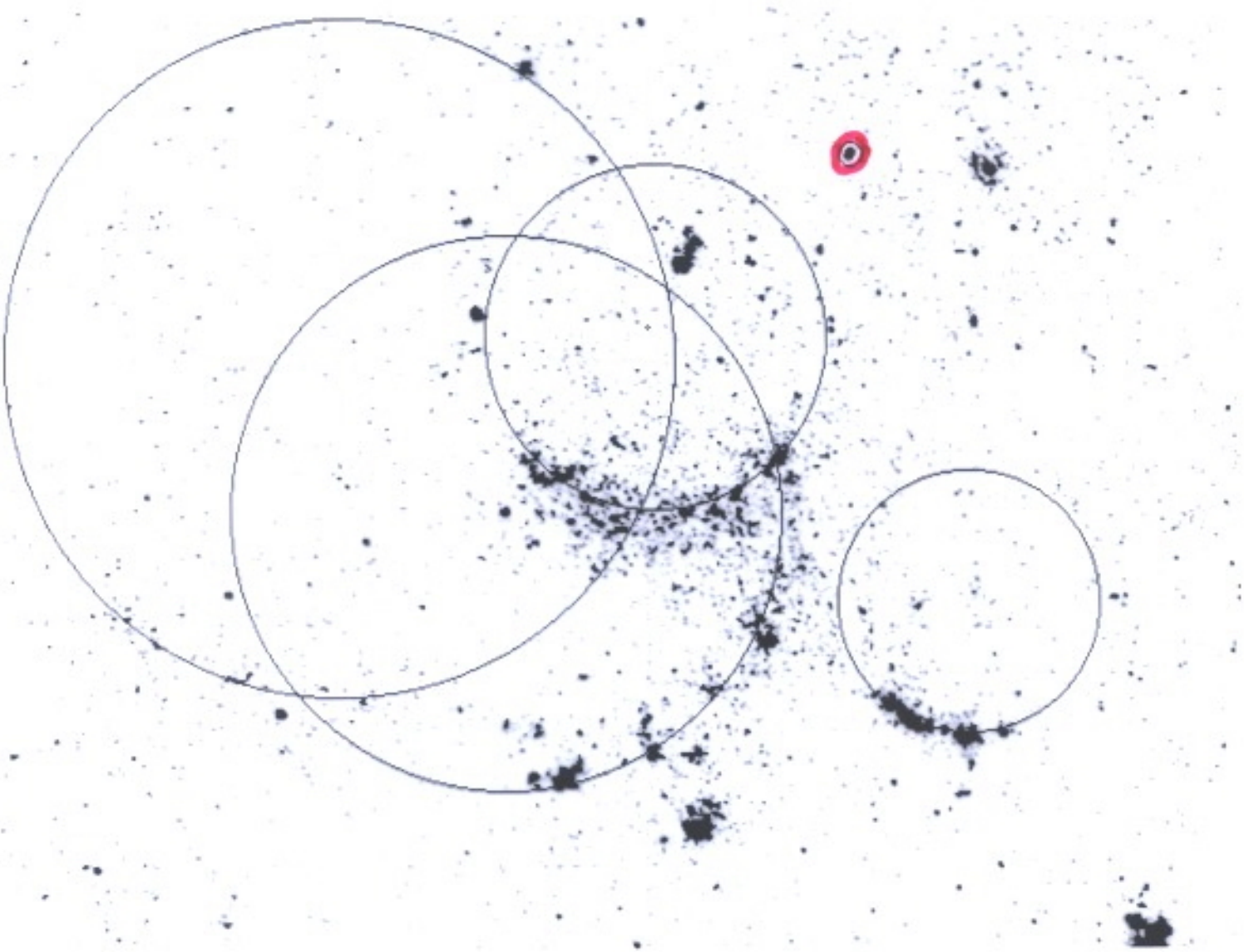
LMC4

HI and clusters



giant stellar arcs in the LMC4 region

• NGC 1978 cluster



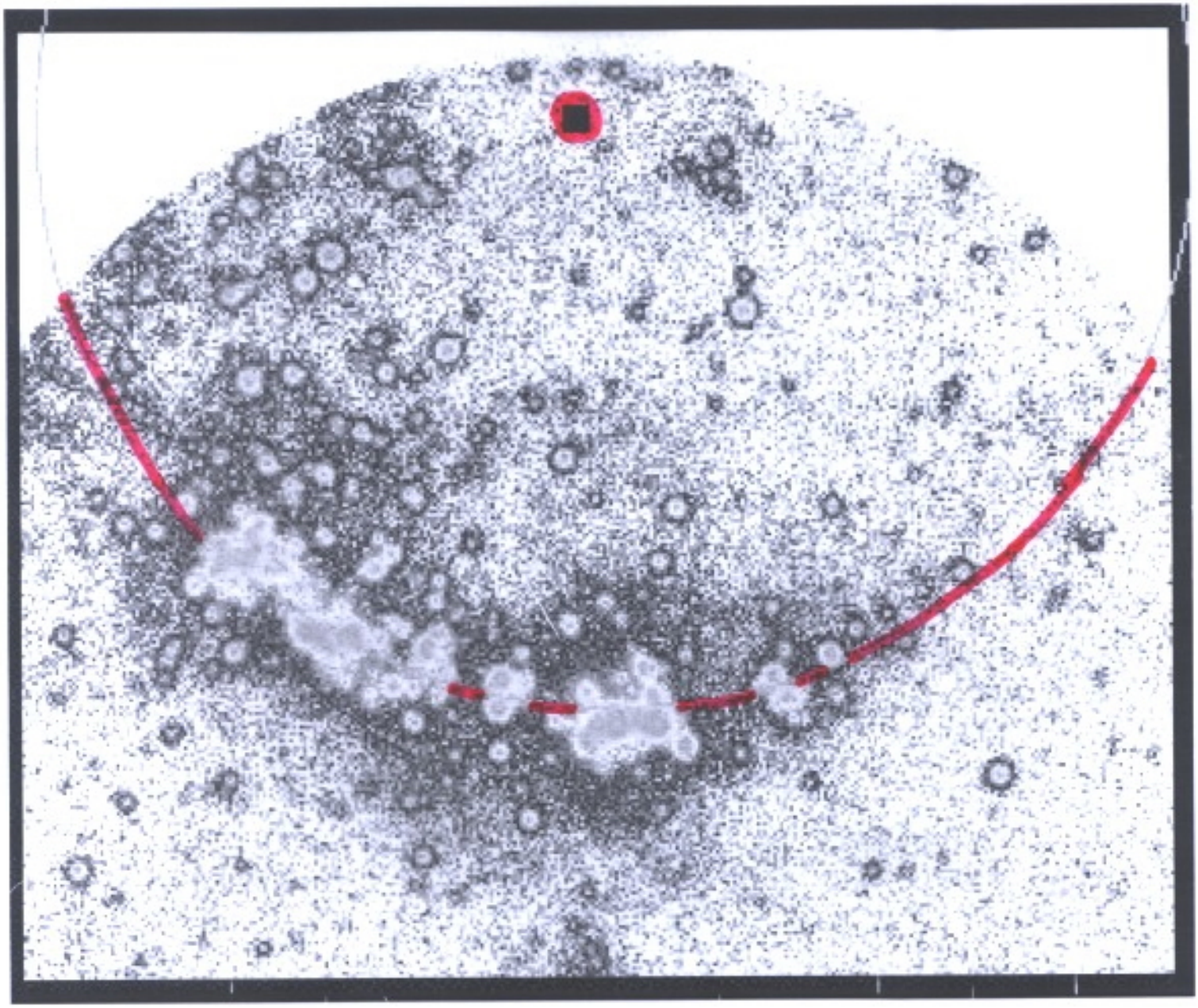
no central clusters – and why all the arcs are only here and close to each other?

Common source for their progenitors?

$\Delta t < 3$ Myr – burst of SF in each arc

part of perfect ring

Sextant
far UV

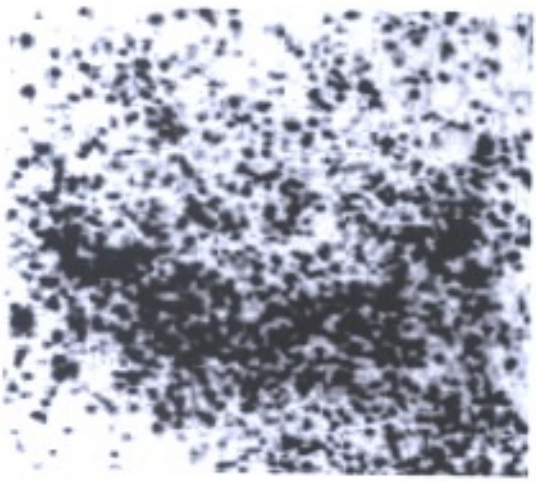


partial spheres (cups)

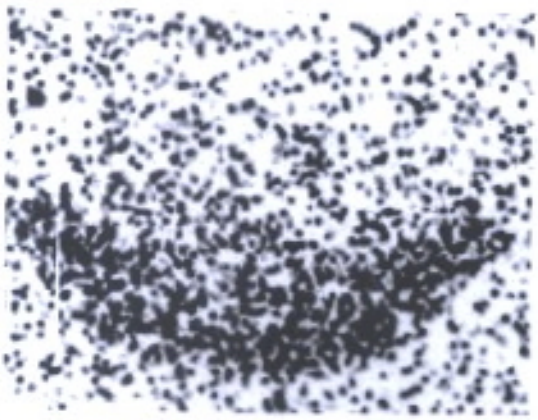
Quadrant

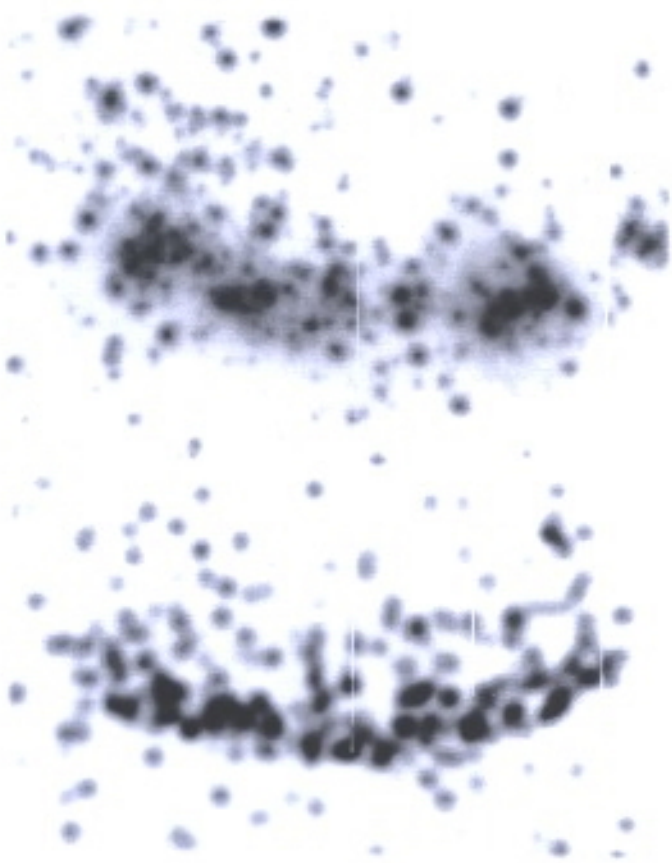
Sextant

observations



model

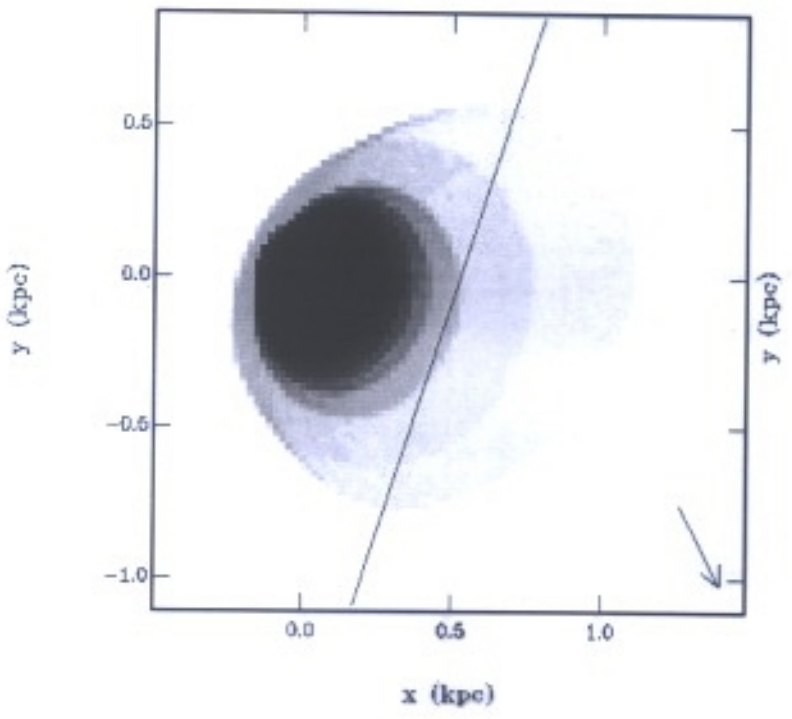


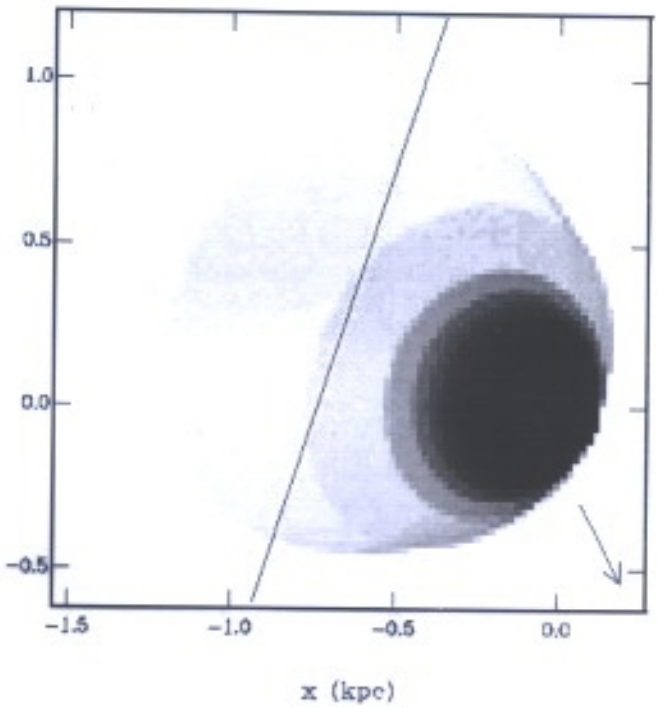


isotropic outburst?

1) near edge of cloud
2) outside the plane







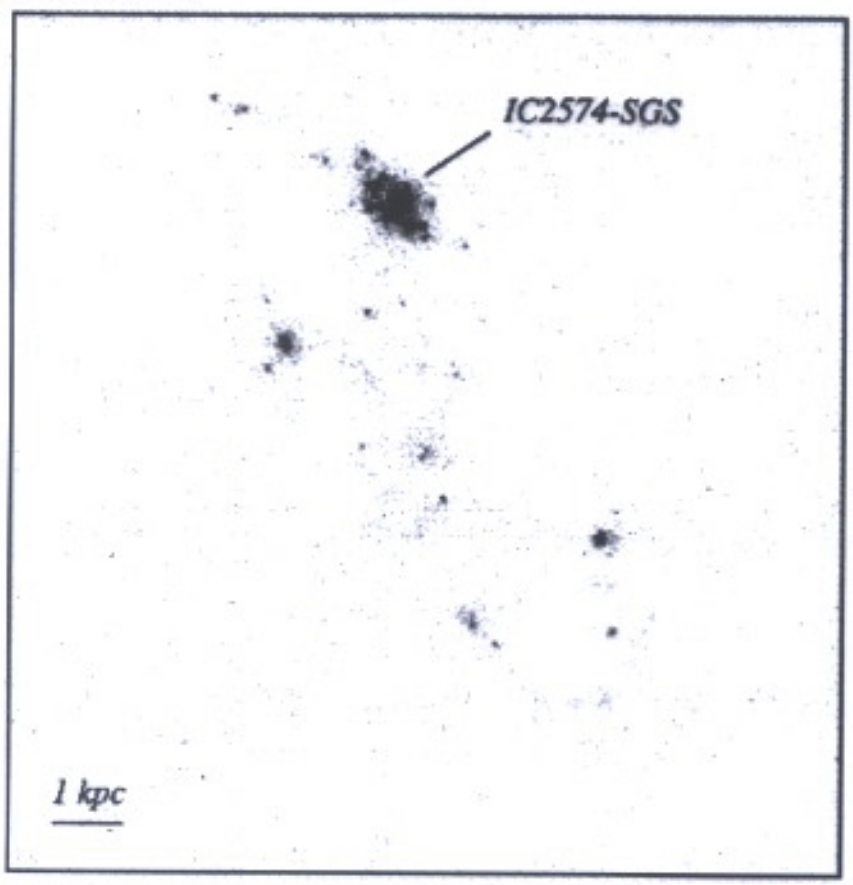
but orientation contradicts (EEP, 1999)

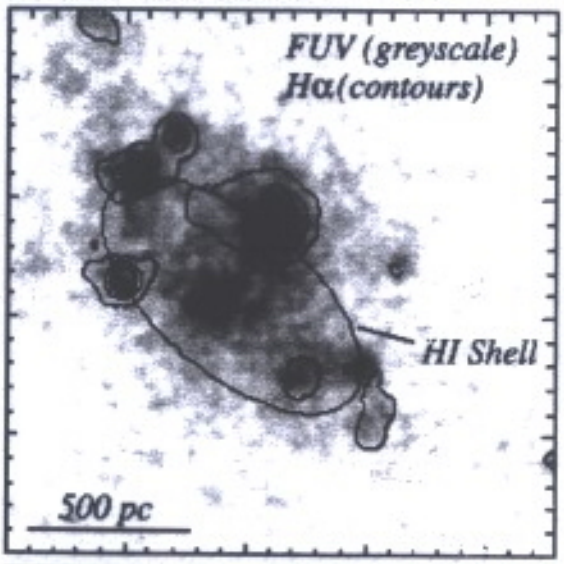
(10) IC 2574

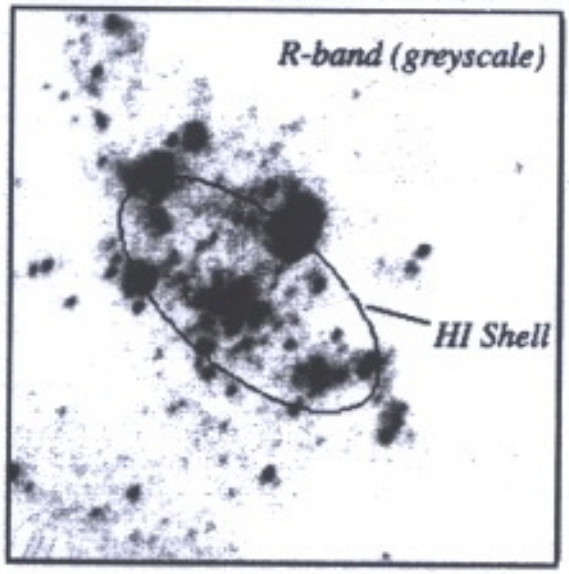
Stewart, Walter

AJ, 2000

The only success of Standard model in action...





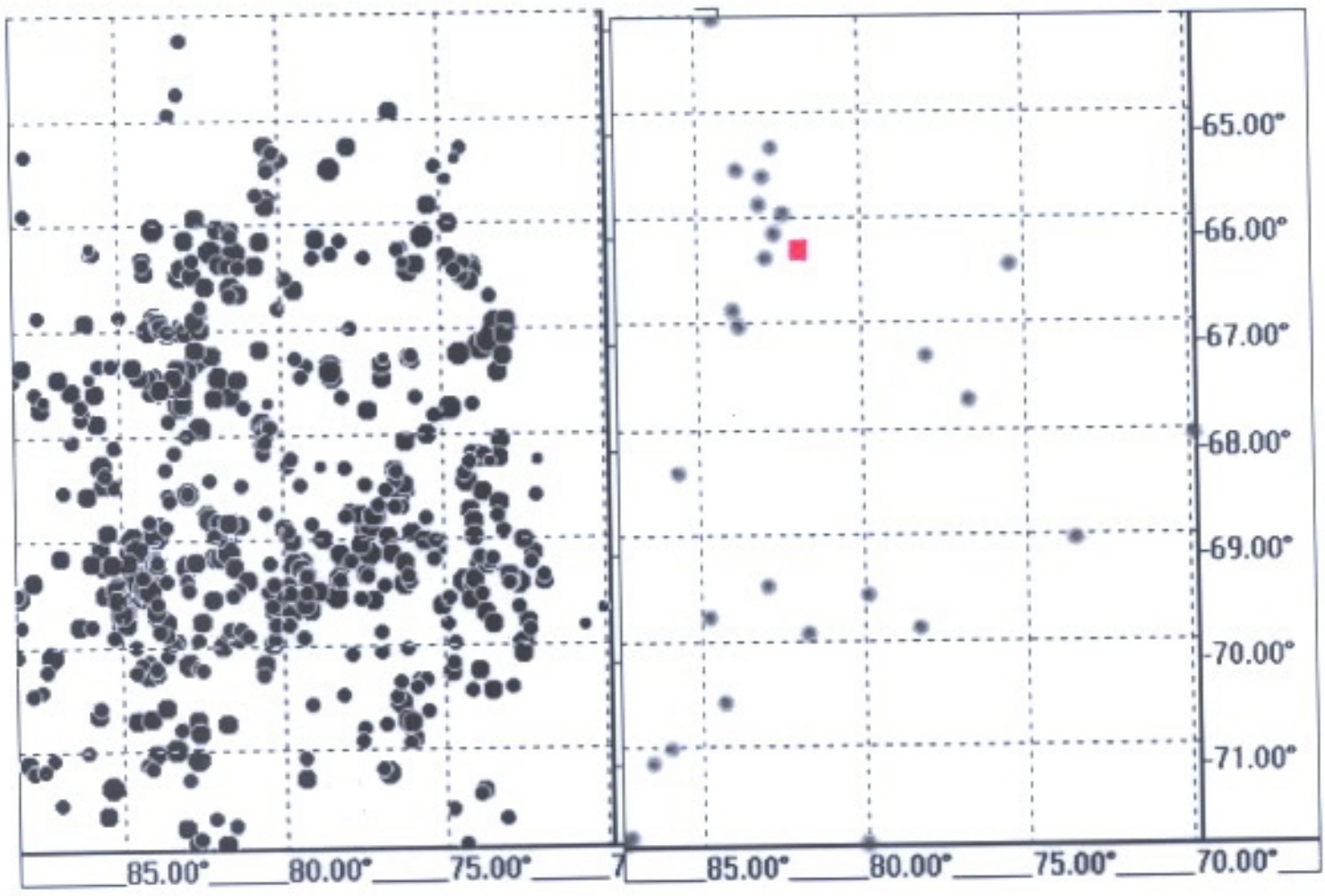


Standard multiple SNe model in action

LMC

clusters

X-ray binaries



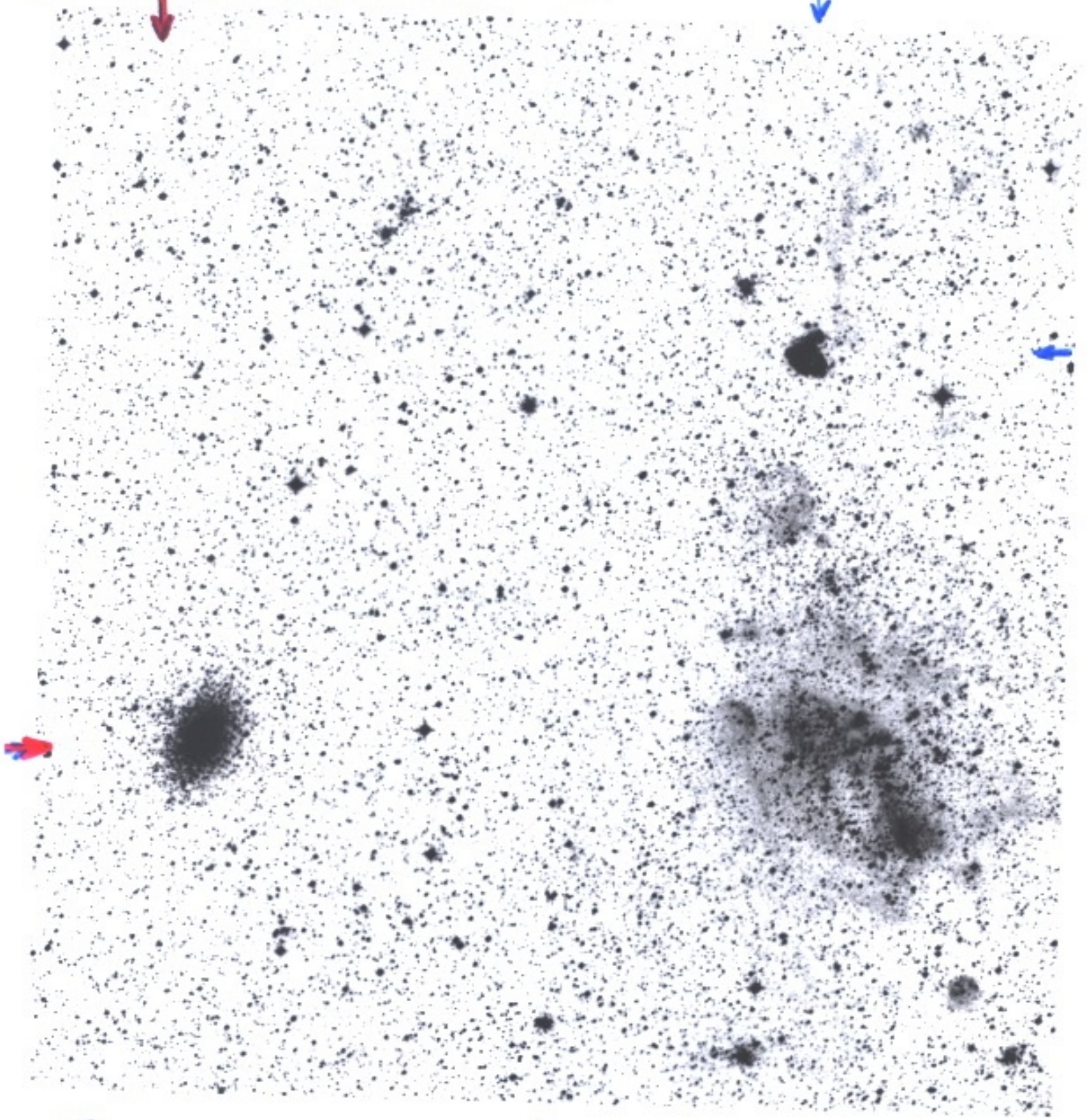
■ NGC 1978

SNR 49 - SGR 0526-66

5.03.79

NGC 1978

$10^6 m_\odot$, 2 Gyr, elliptical



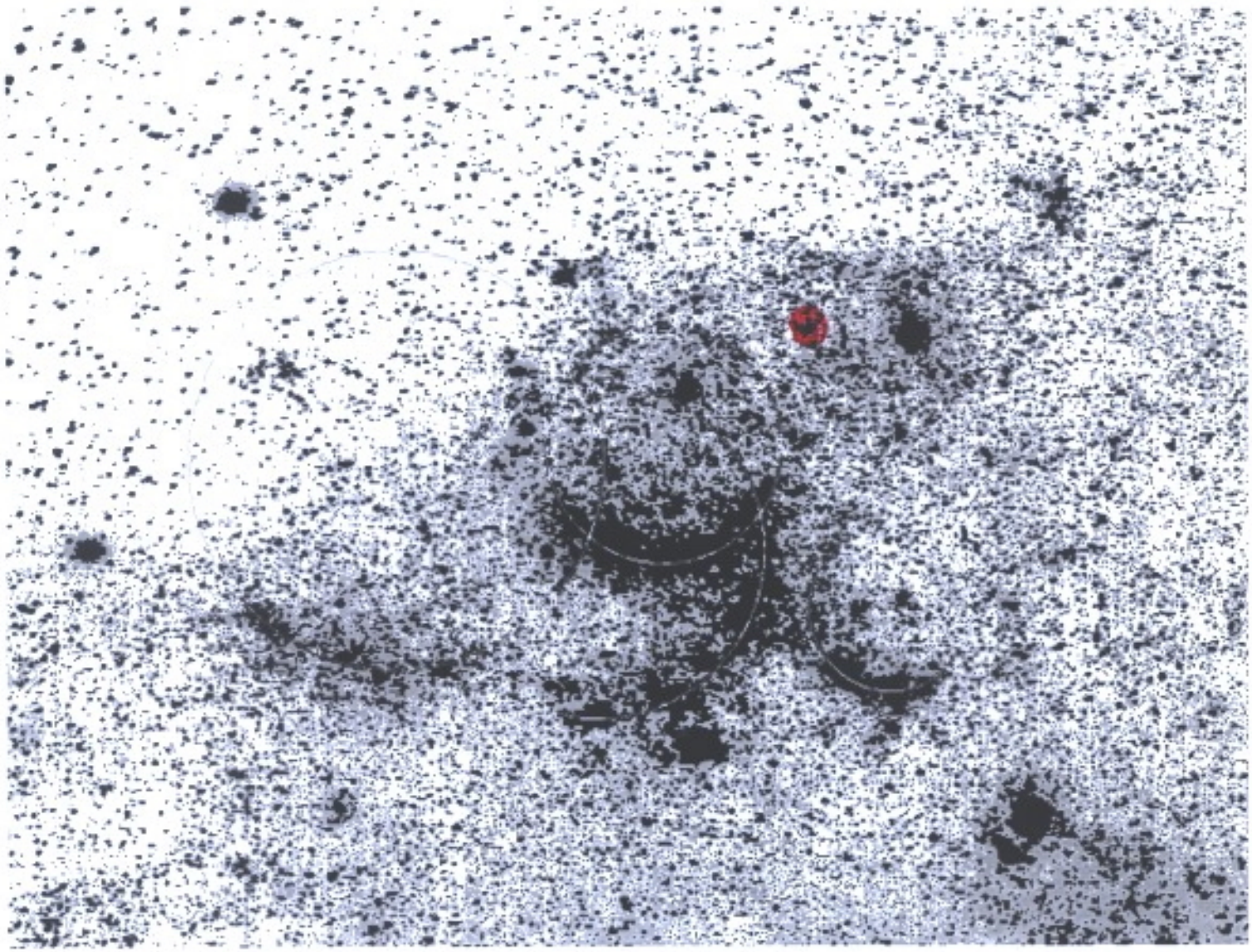
Progenitors might be ejected from N 1978 at the core collapse stage?

Microquasar SS 433 jets – $2 \cdot 10^{51}$ erg during $2 \cdot 10^4$ y

10^{52}

around-HI shell, d ~ 100pc

during 10^5 y – energy enough to form arcs



IMirabel – MQS ScoX-1 was ejected 30 Myr ago from a globular cluster

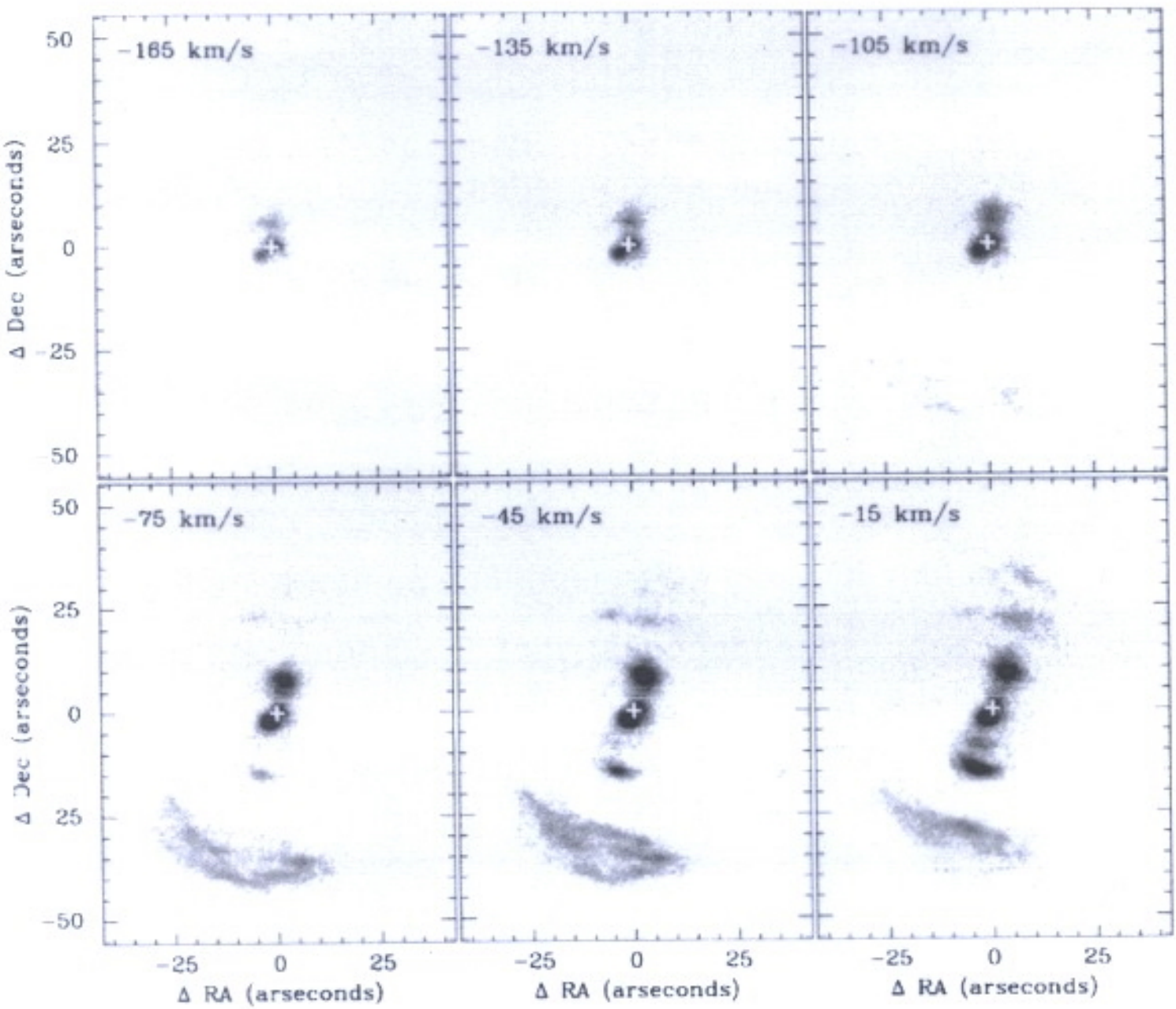
AAp, Jan. 2003

wide arcs from narow jets from MQS

NGC 5252

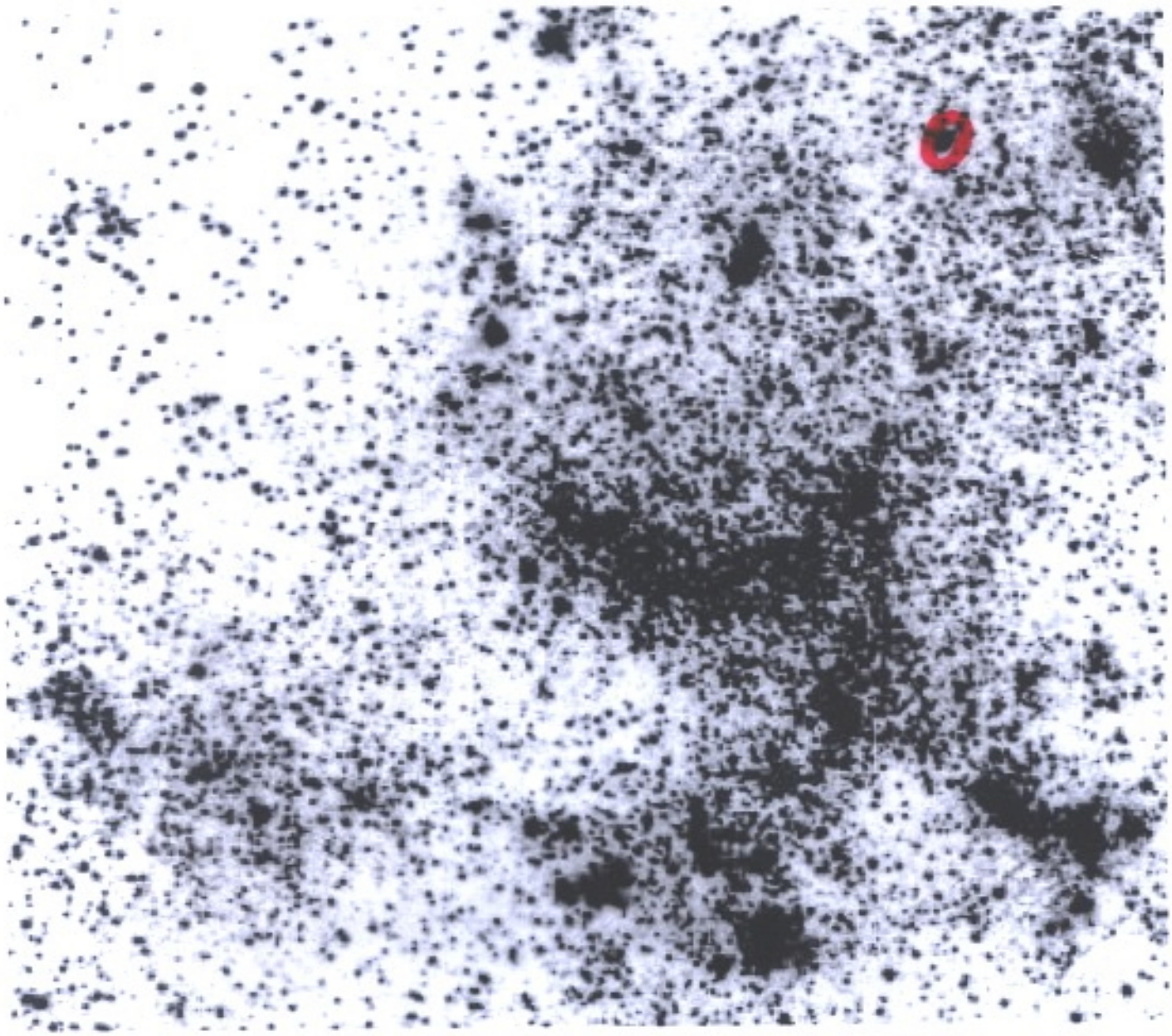
J. Morse et al., 1998

[O III]



"cone of ionization" – from shock waves due to interaction of jet with ISM (Mustsevoi et al., 2000). Opening angle ~ 60°

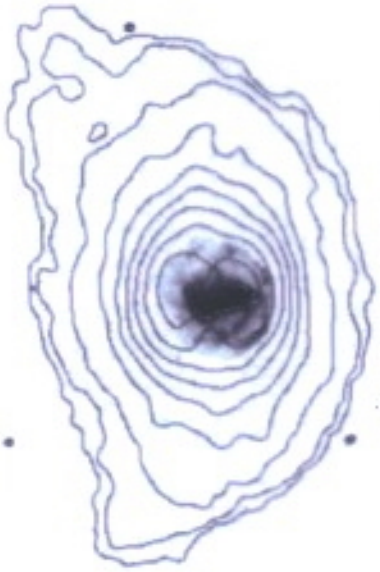
HVC impact (Tenorio-Tagle, 1980) (15)
ram pressure to oblique impact
?

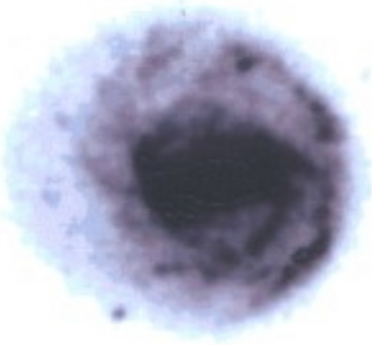


O NGC 1978

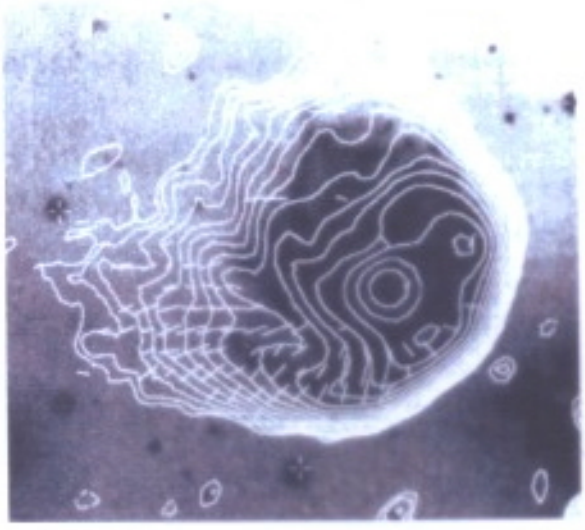
bow shock → star formation

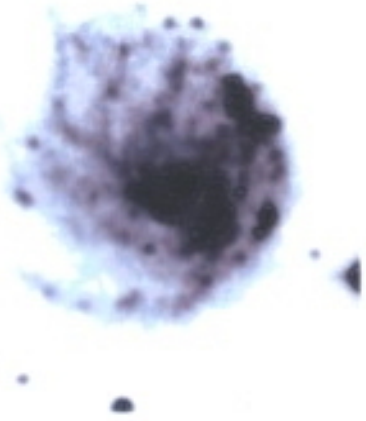
gas : stars NGC





7421





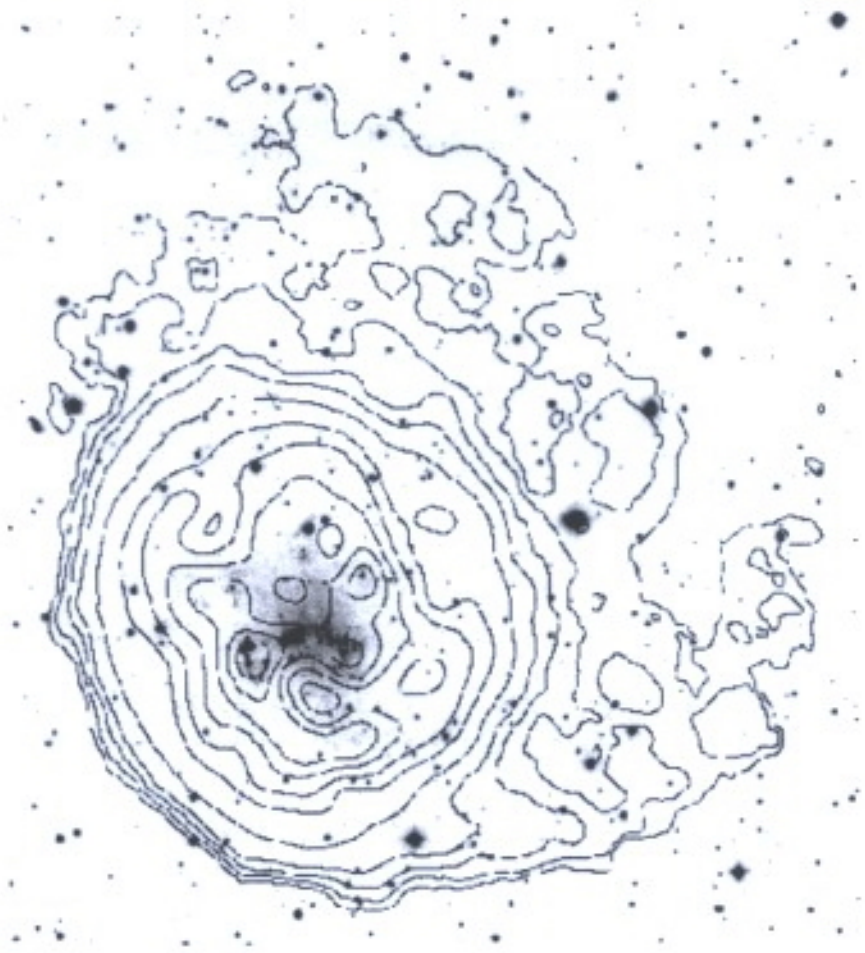
2276

Bureau, Carignan, 2001

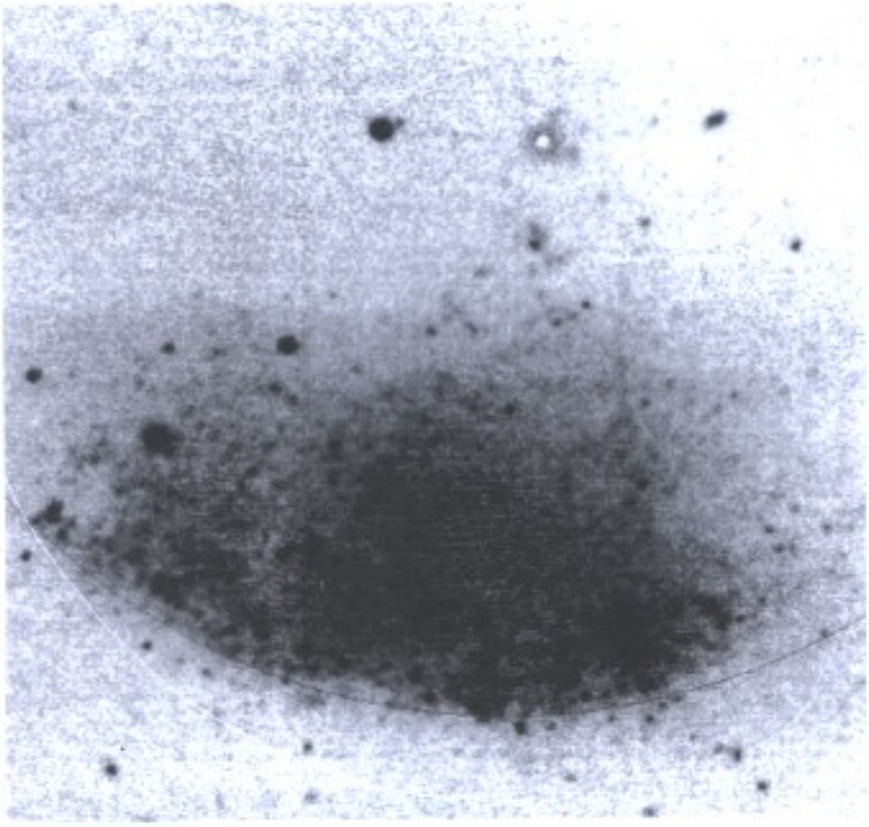
Ho II

17

HI



M81 group

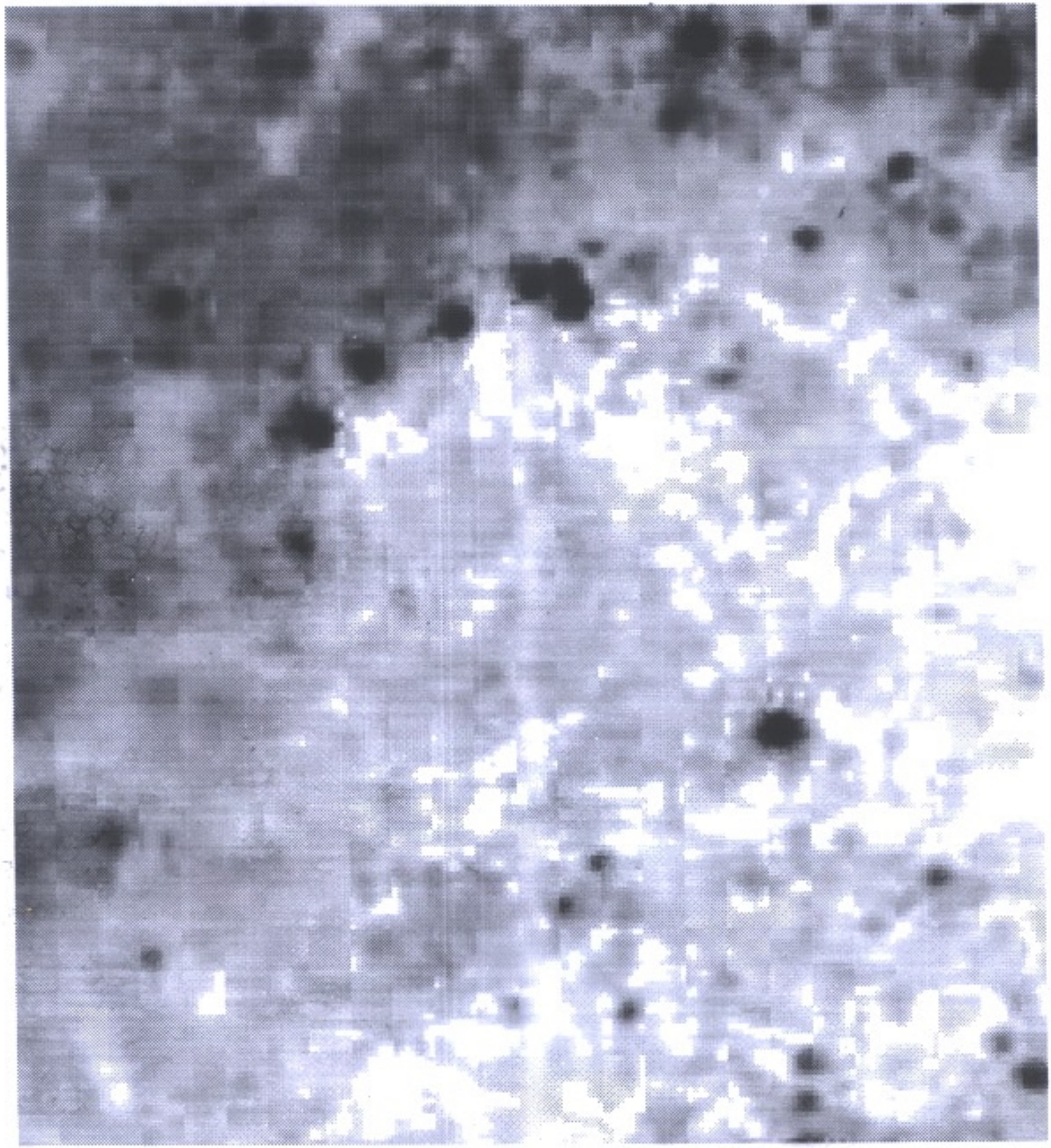


DDO165

6-m telescope

stars

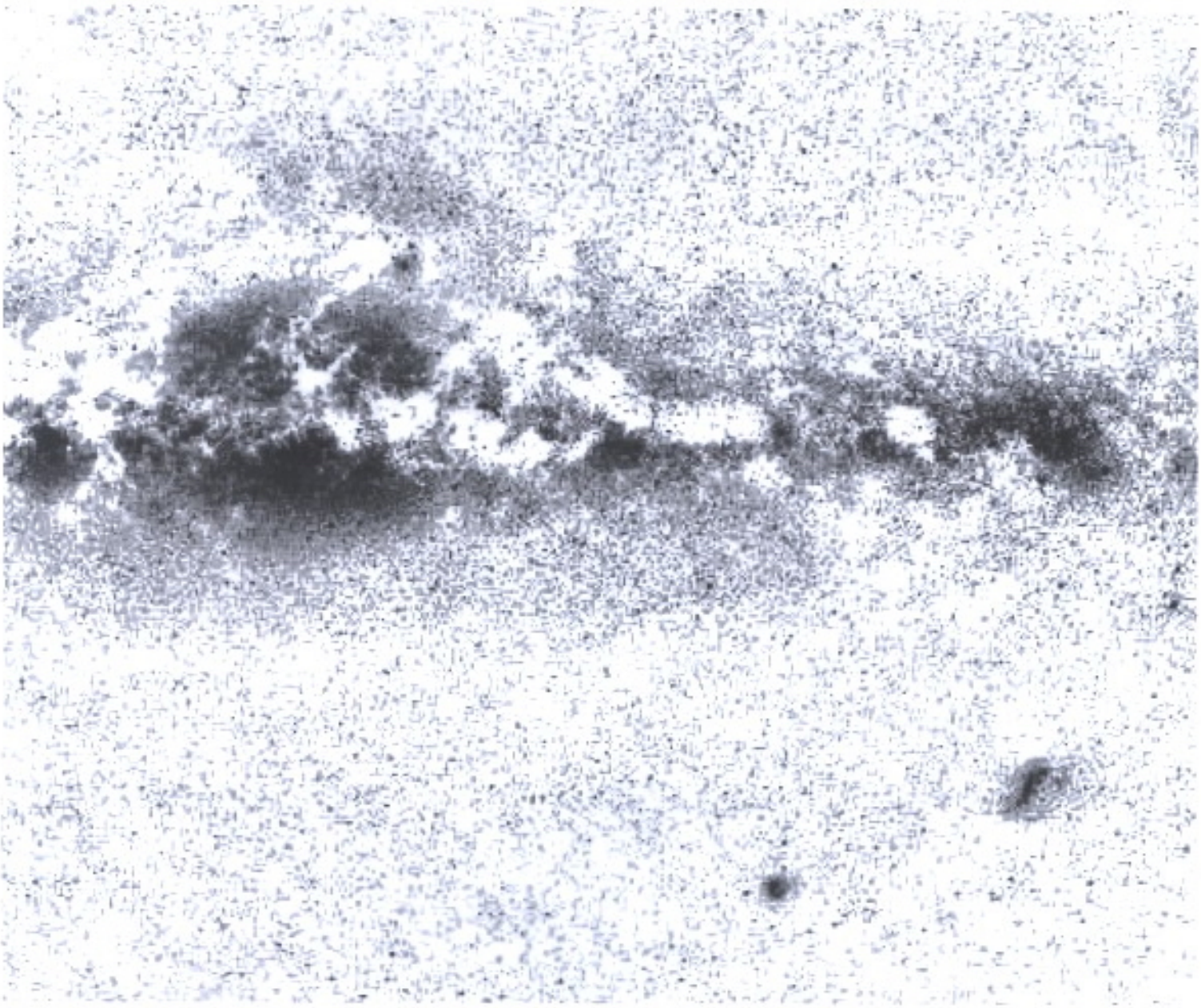
the only other sample of regular arcs M83
10-100 SN needed to form the shells of swept-up gas, where the arcs of clusters could be formed



No remnants of parent clusters inside most of HI supershells (Ho II galaxy) or arcs of clusters
Impact of HVC is improbable, they are far too large

the idea crazy enough to be correct?

Milky Way



SMC LMC