A bright off-nuclear X-ray source: CXO J122518.6-144545

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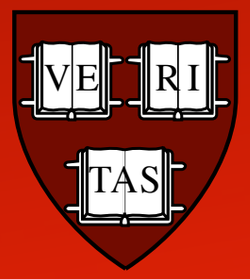
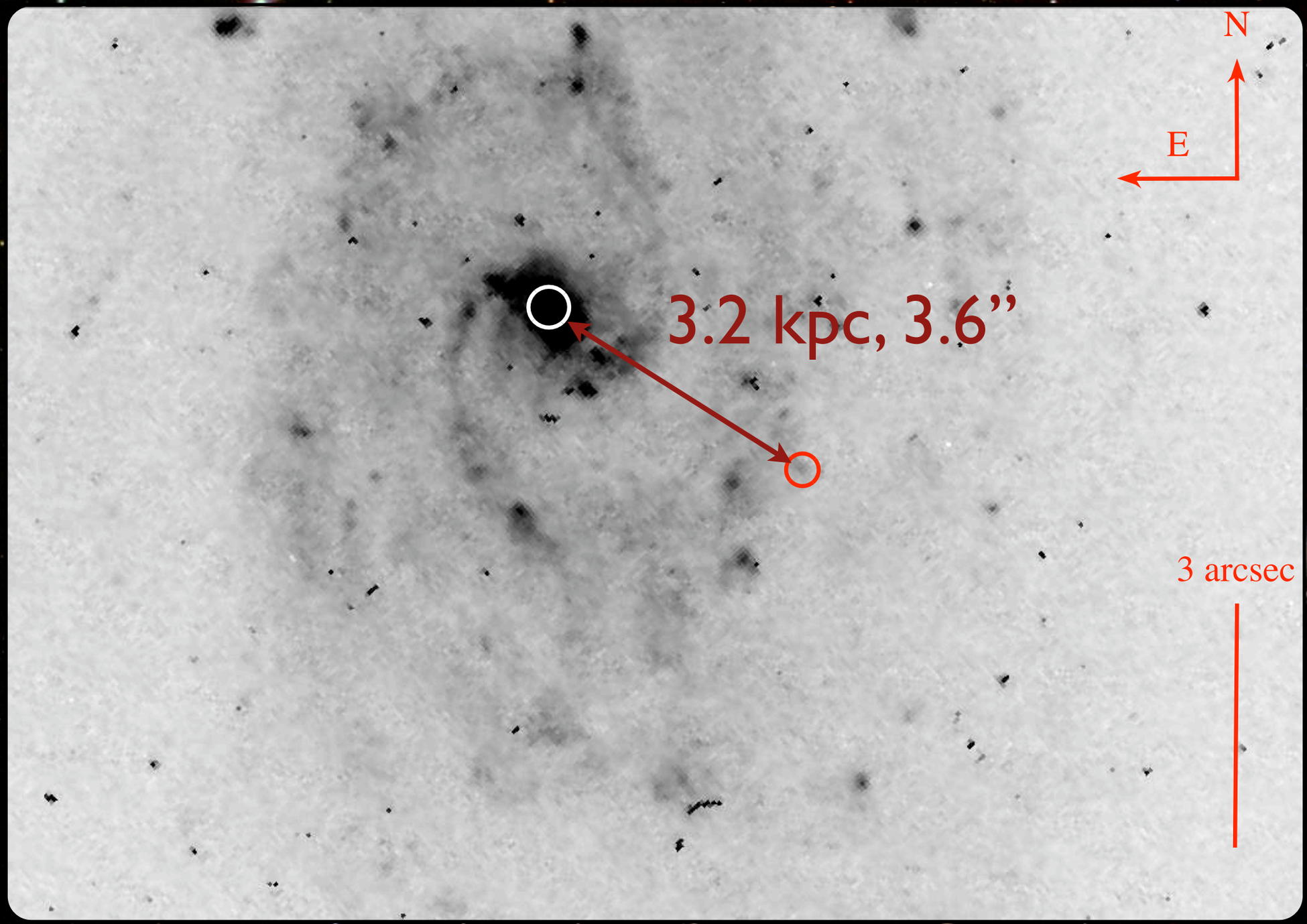


XMM-Newton Middle Weight BHs, Madrid May 24-26, 2010

A bright off-nuclear X-ray source

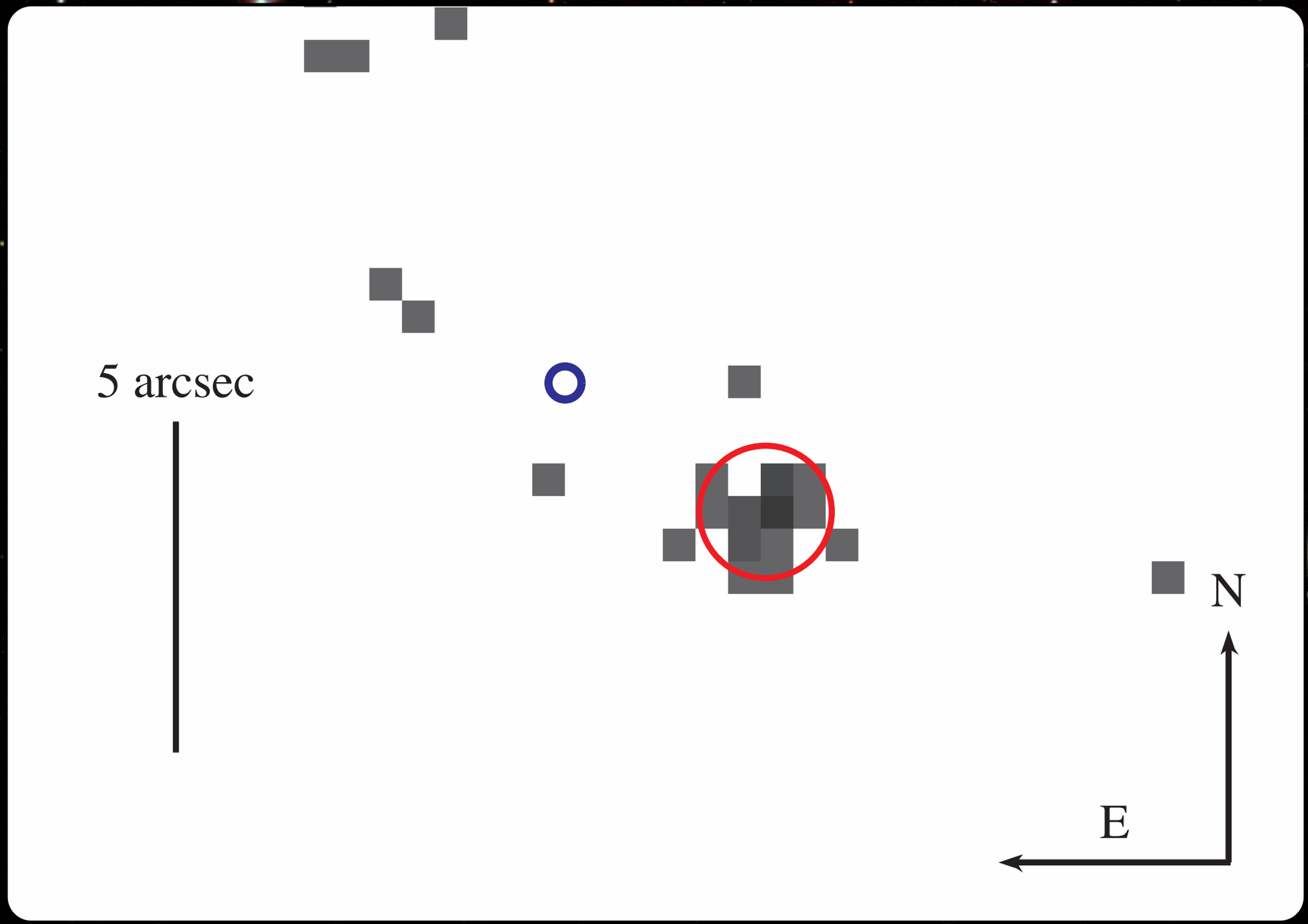


HST ACS g’-band observation

Fact

Jonker et al. 2010, MNRAS, accepted

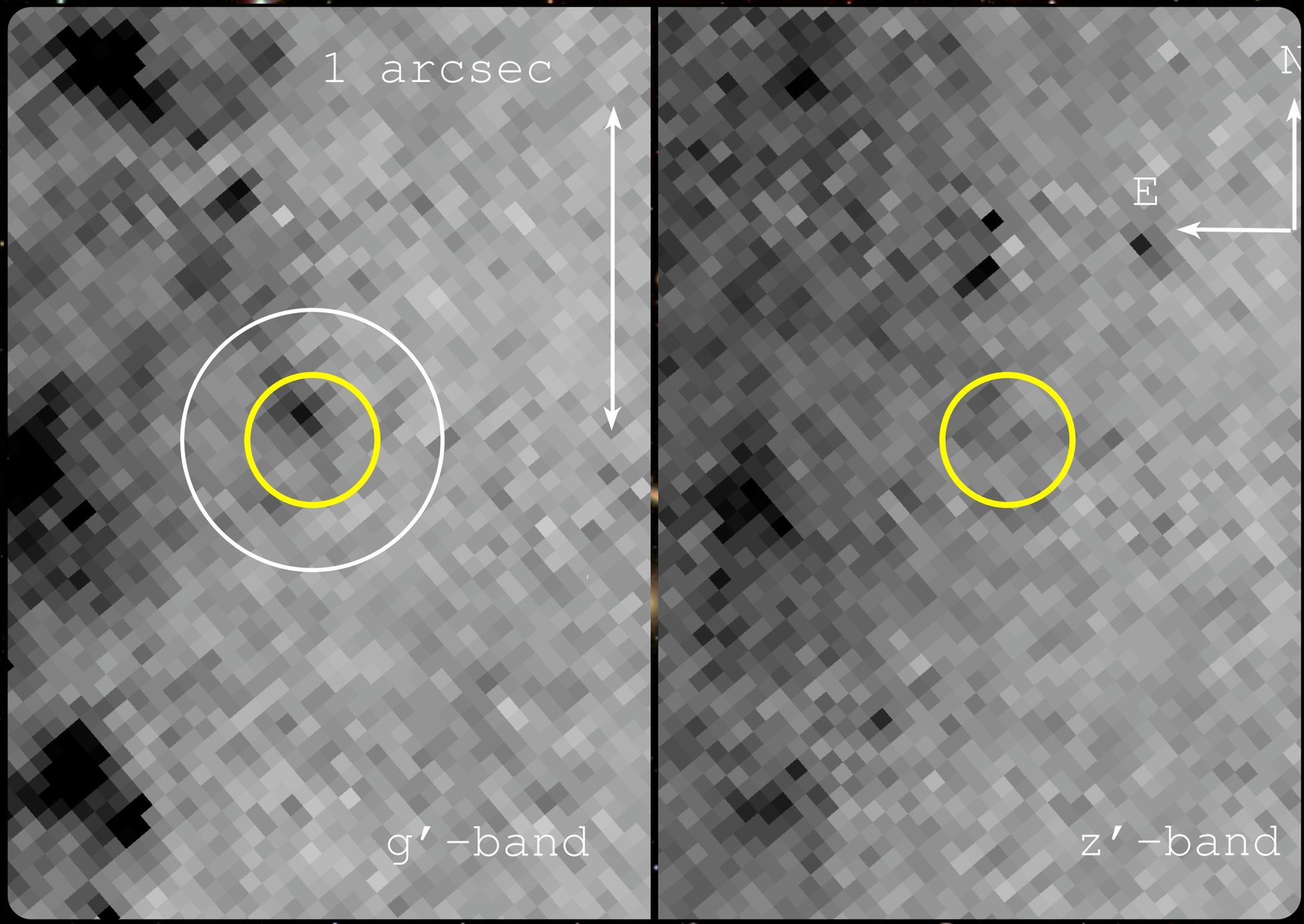
A bright off-nuclear X-ray source



5 ks Chandra observation

Fact

Blue optical candidate counterpart



HST ACS g'-band and z'-band observation

Fact

Background AGN?

g'-z'– colour of ROSAT - SDSS AGN

→ g'-z'≈0.7±0.5 (Anderson et al. 2007)

background AGN, assume PL=1.9 →

add extinction due to galaxy of 5×10^{21} cm^{-2}

background AGN → g'-z'≈-1.3

Scenario

Late time SN Type IIn?

cf Fabio Pizzolato's talk yesterday on N10

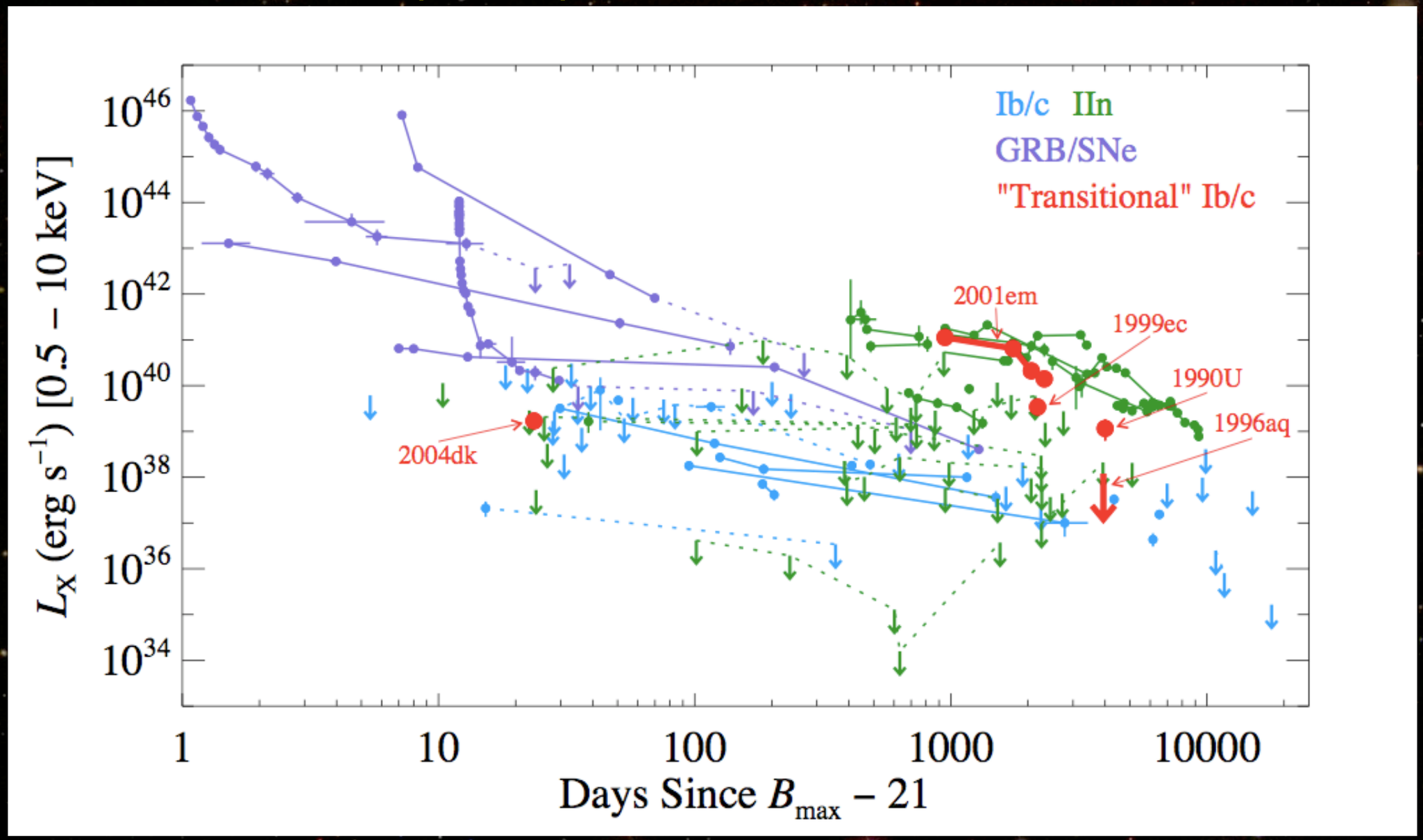
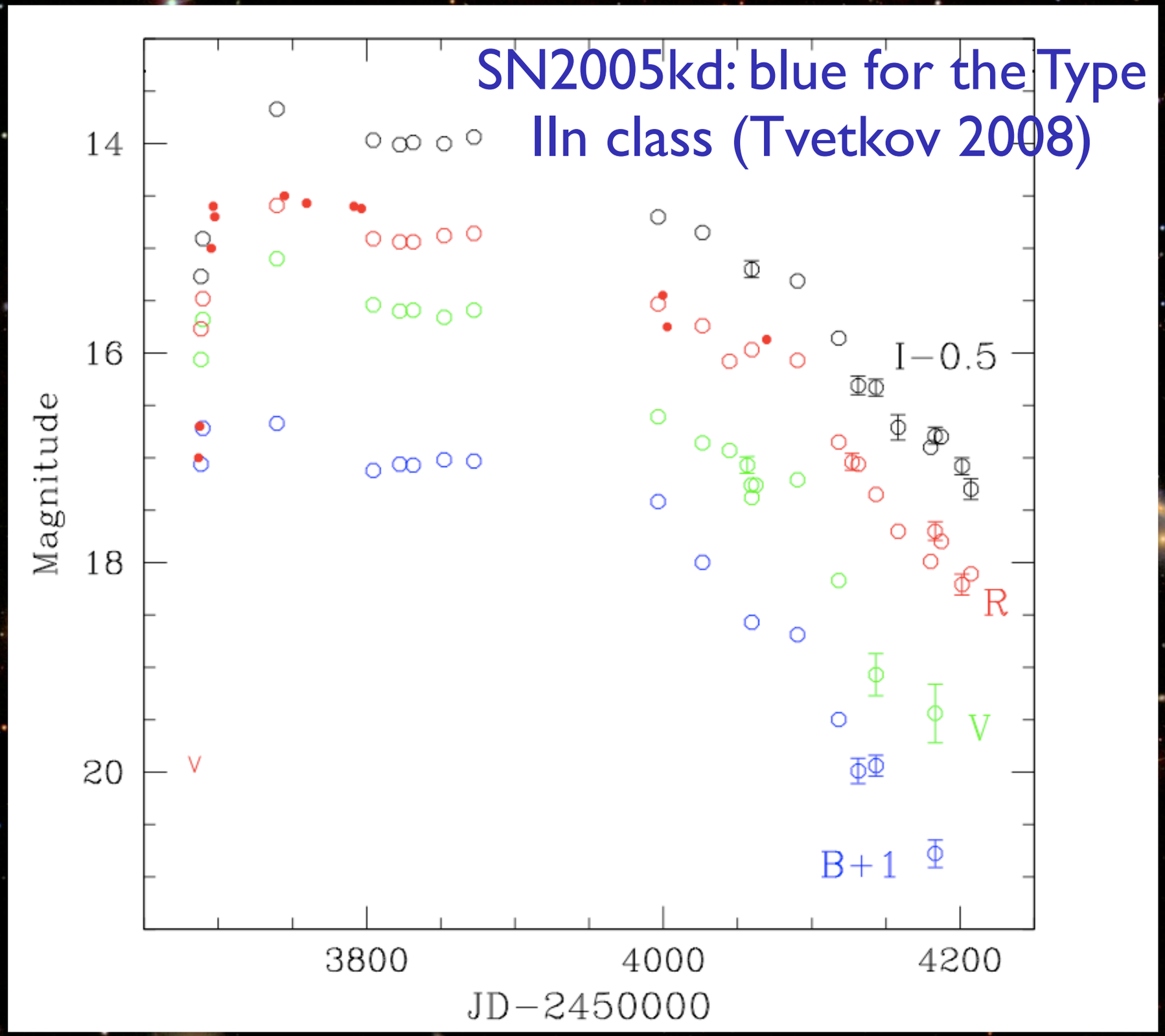


figure from Pooley

CXOJ1225 → HST June 2003; Chandra Feb 2008

Scenario

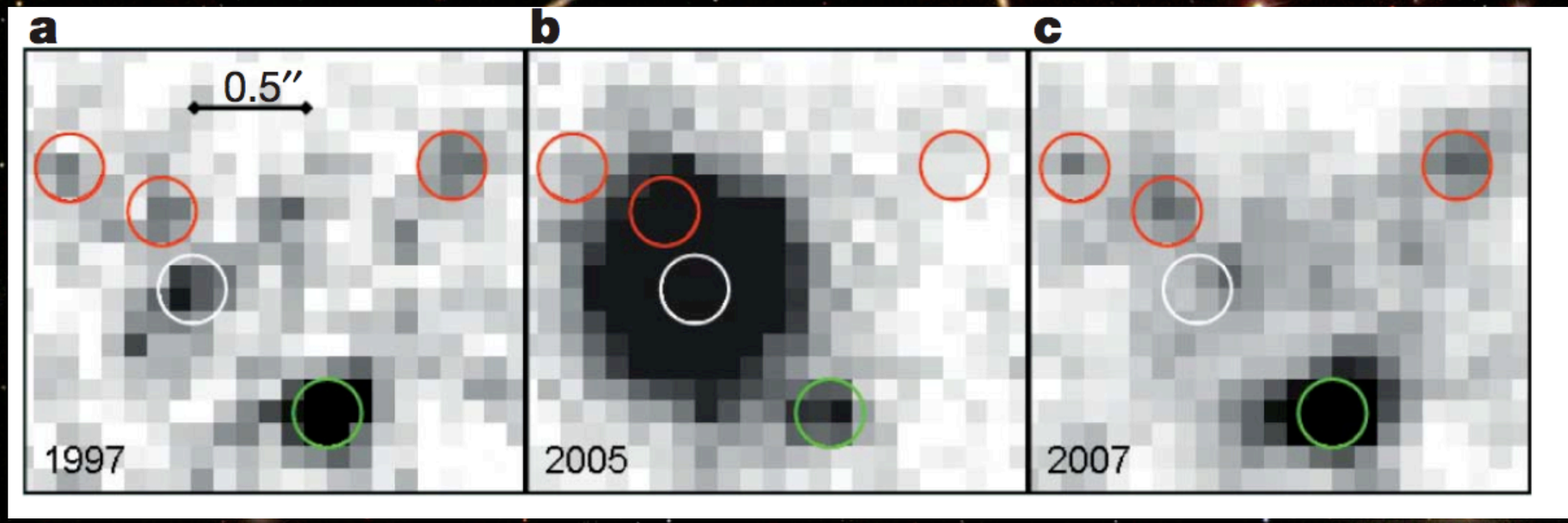
Late time SN Type IIn?



Tvetkov (2008)

Scenario

HST blue pre-explosion SN Type IIn?

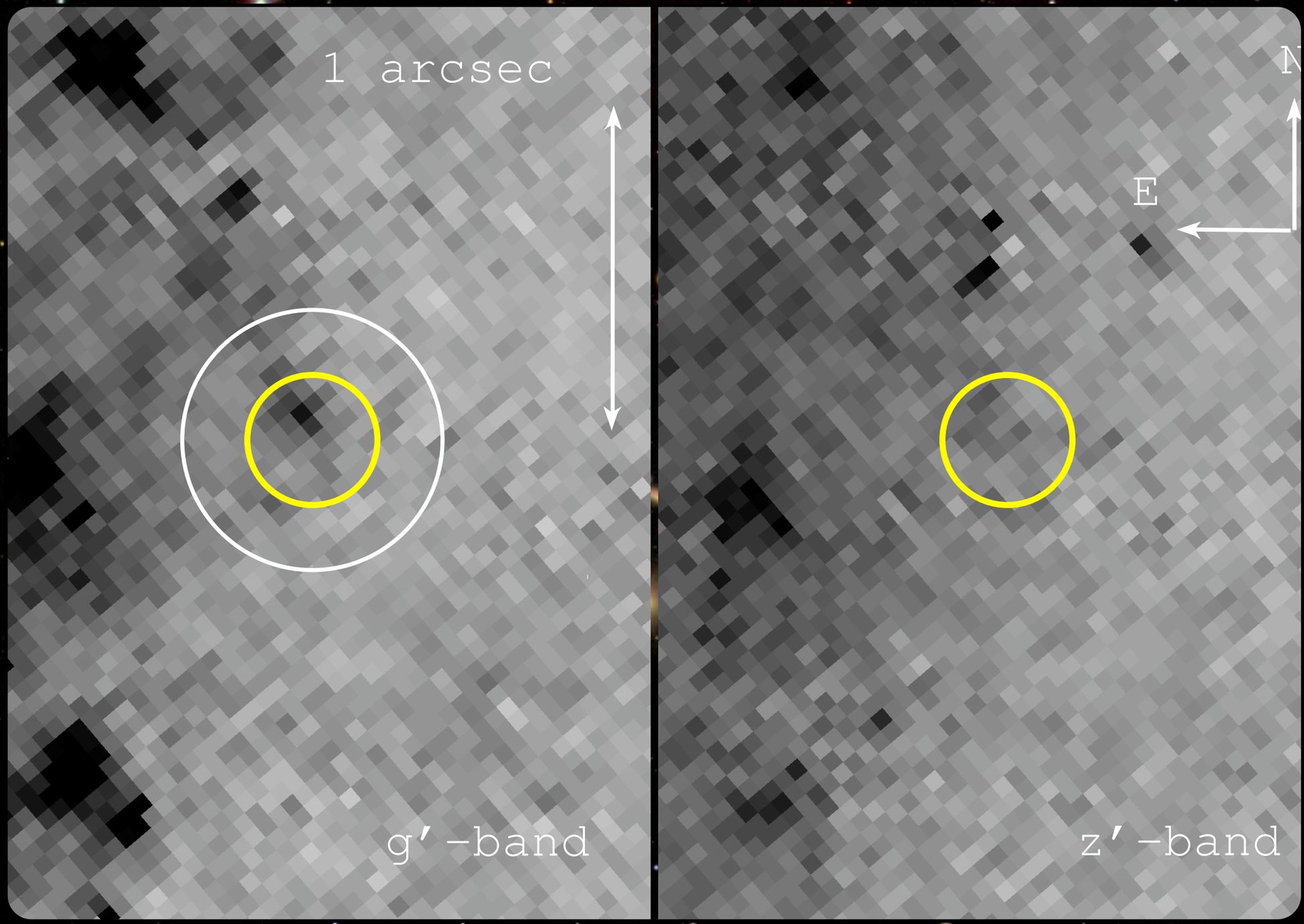


Exploding LBV?

cf. SN 2005gl Gal-Yam & Leonard 2008

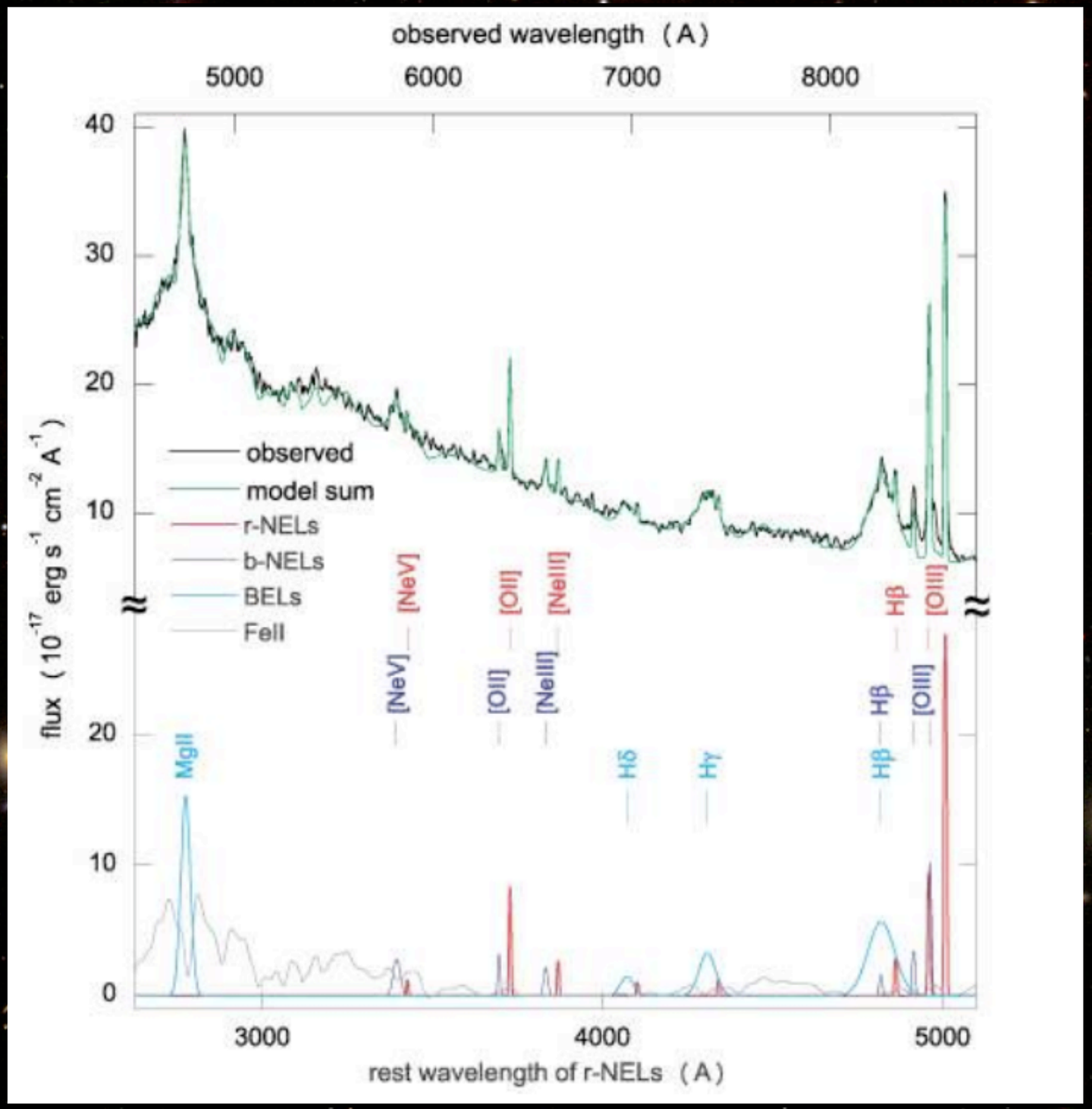
Scenario

ULX? bright in opt & X-ray



Scenario

Recoiling SMBHs: candidates



From Komossa, Zhou, Lu 2008

See also Shields et al. 2009, Boroson & Lauer 2009; Civano et al. 2010

Scenario

2nd epoch Chandra & HST obs

Handle on the X-ray spectrum

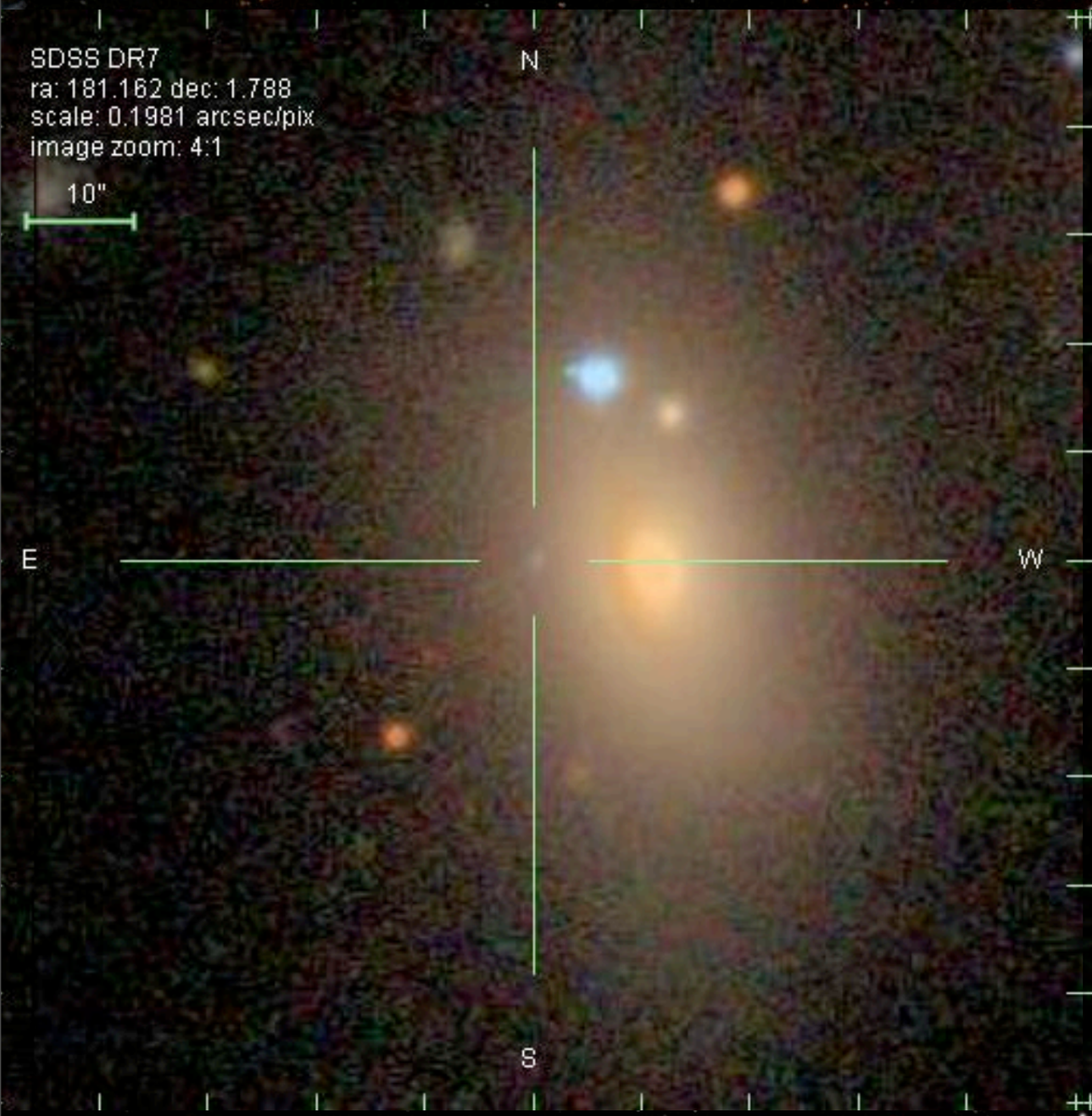
Nuclear X-ray activity?

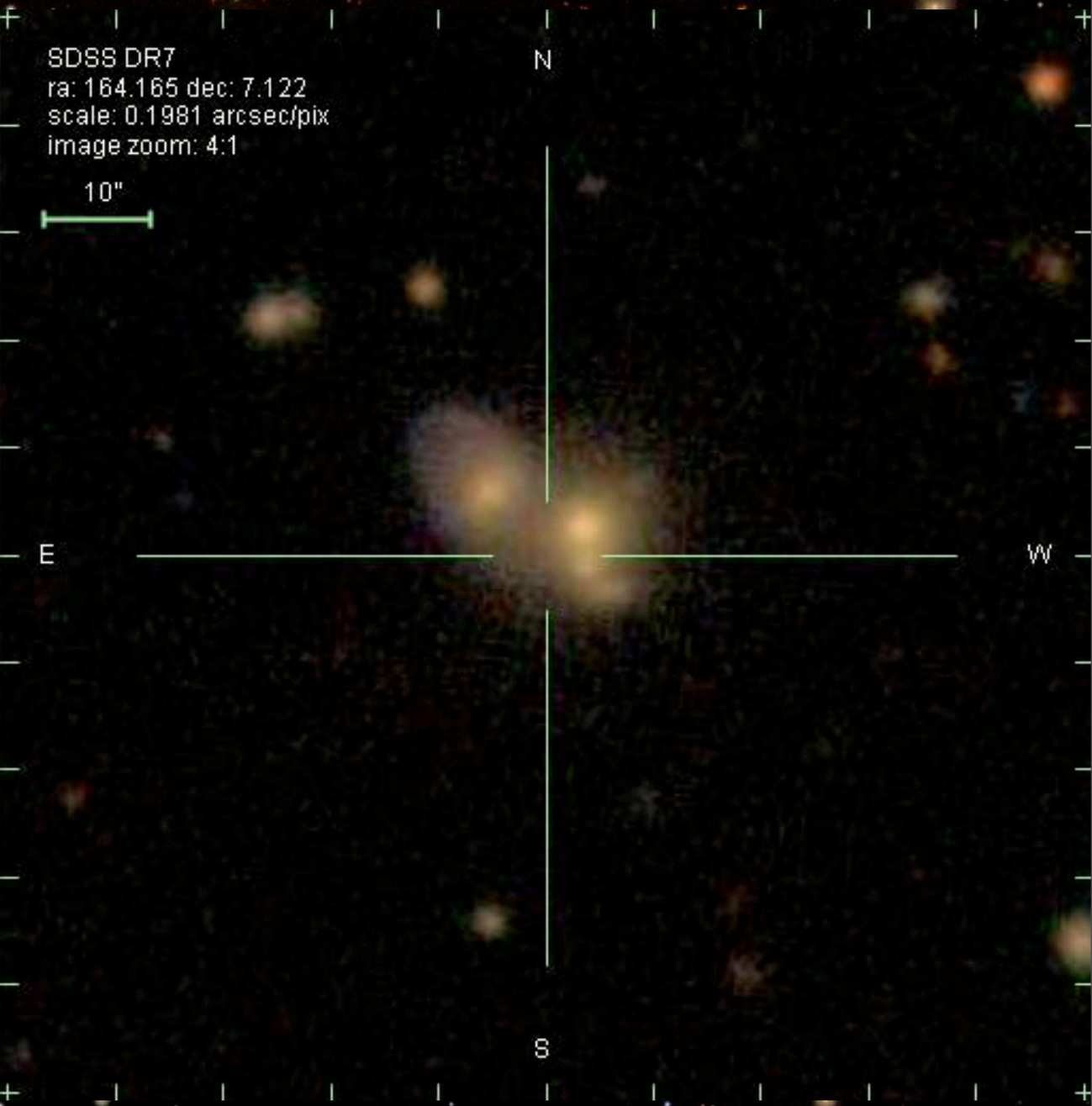
Variability opt & X-ray

General: optical spectroscopy

Answers

Other interesting sources





Answers

Conclusions:

CXOJ1225 is a bright ULX; its nature is currently uncertain

Some bright off-nuclear sources could be recoiling or ejected SMBHs accreting from a star from the NST or in a GC (cf. Irwin et al. 2010, NGC 1399)

It will be difficult to distinguish between recoiling and infalling (S)MBHs (cf. ESO 243-49; Sean Farrell's Talk; Soria et al. 2010)

Interesting press coverage

Herschel Telescope found a giant moving black hole

Astronomers at the European Space Agency (ESA), led by Marianne Heida, an undergraduate student at the University of Utrecht, found an empty void and not just some dense clouds of gas that prevent light from passing through; that was by using the infrared technology from Herschel Telescope, which is several times larger than the Hubble telescope.

from ecPulse.com

Fantasy