Keck / DEIMOS Spectroscopy of Lyα blobs at z=3.1

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Ly α blobs (LABs)

- Diffuse and large Ly α nebulae at high-z

  (Keel et al. 1999, Steidel et al. 2000,Francis et al. 2001)

- LABs live in proto-cluster regions

  (Palunas et al. 2004, Matsuda et al. 2004)

- A significant fraction have FIR dust emission

  (Chapman et al. 2001, Smail et al. 2003, Geach et al. 2005)

The site of massive galaxy formation?

Ly α emitters (LAEs)

- Compact Ly α nebulae at high-z

  (Pascarelle et al. 1998, Venemans et al. 2005)

- Young and low stellar mass

  (Yamada et al. 2001)

- No bright FIR dust emission

  (De Breuck et al. 2003)

Building blocks of galaxies?

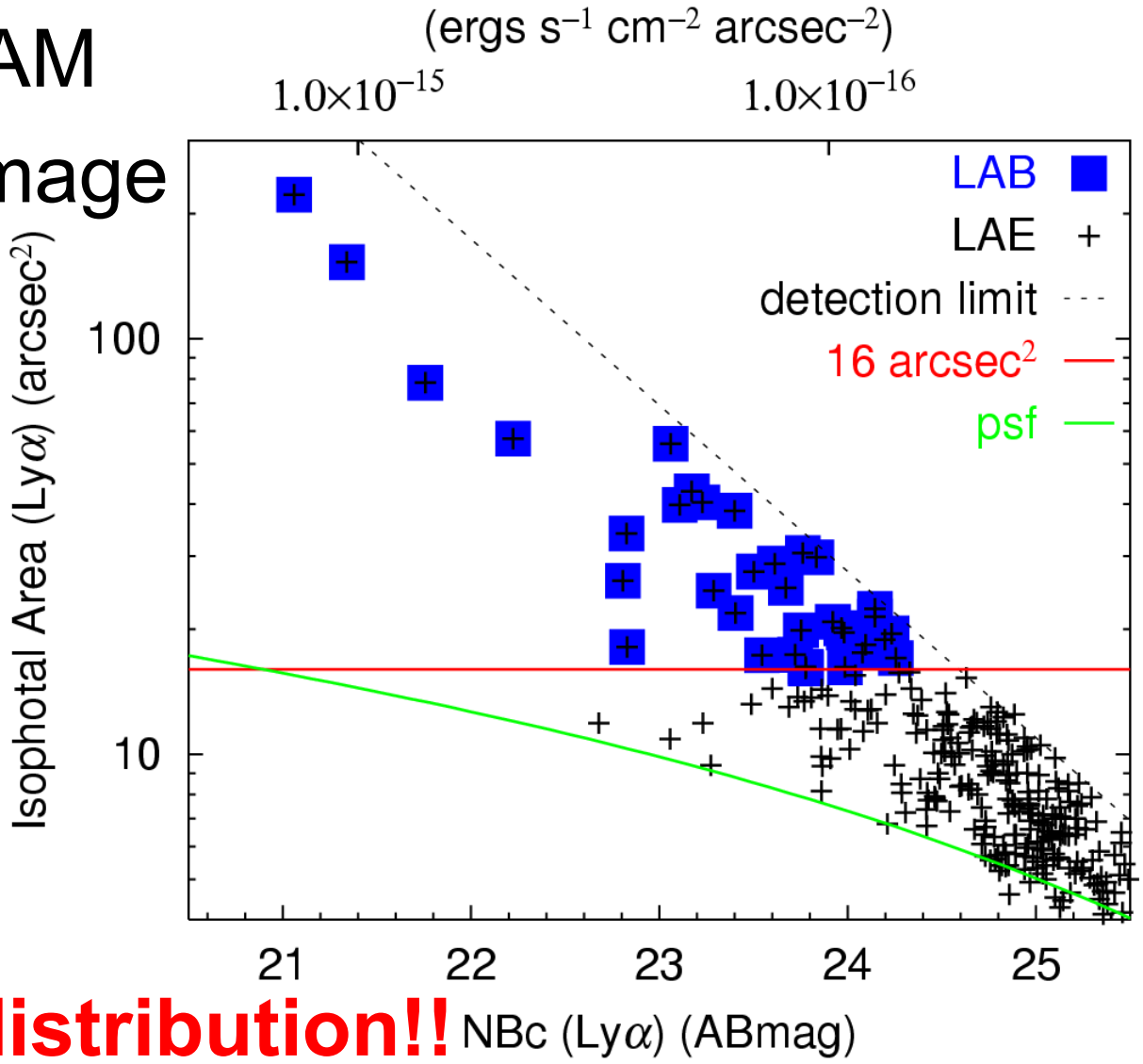
Connection between LAB & LAE

very deep SCAM

Narrowband image

detection of many diffuse & extended Ly α nebulae

(Matsuda et al. 2004)



Continuous distribution!!

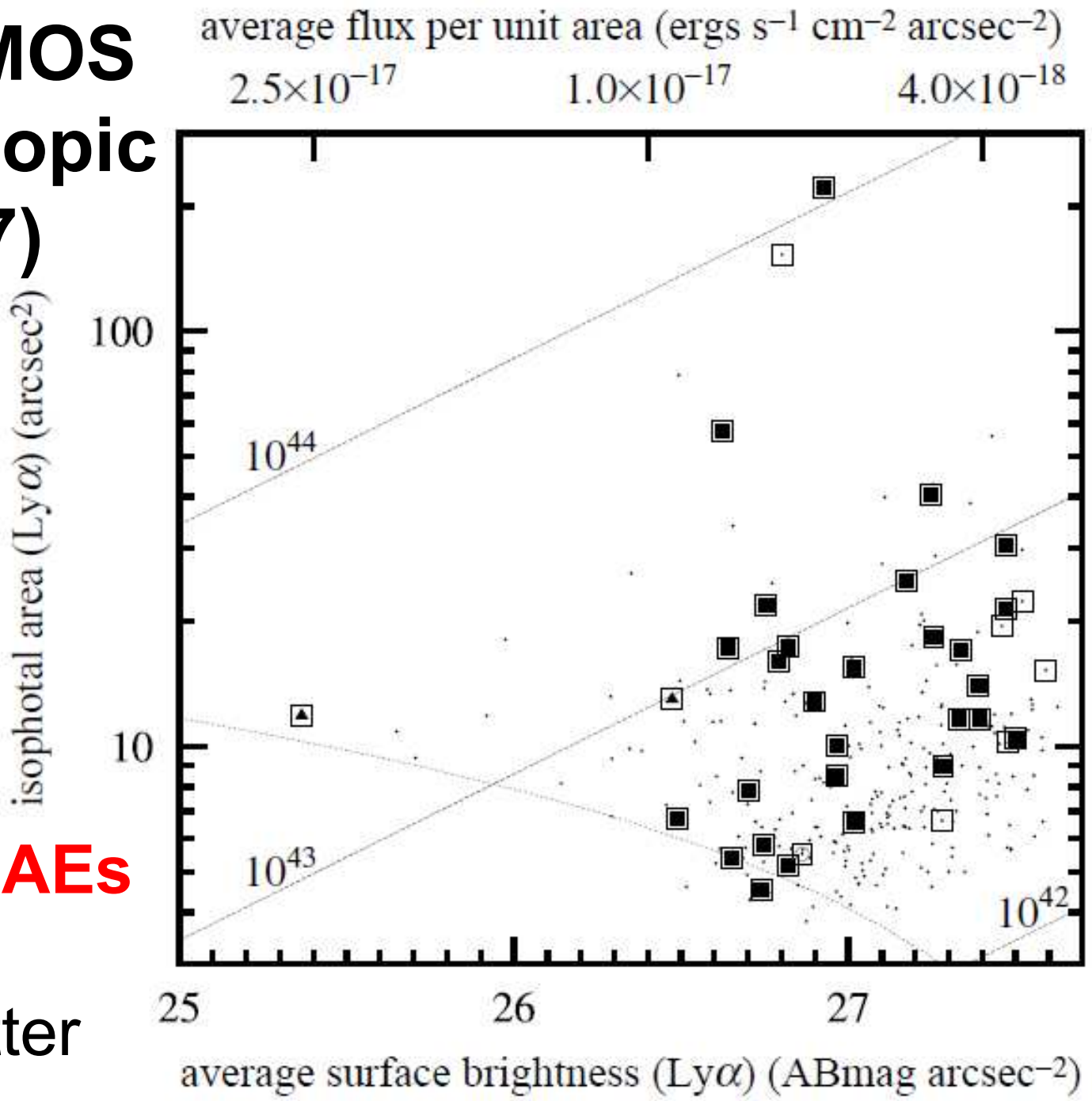
Keck/DEIMOS Spectroscopic targets (37)

Wide range of spatial extents, average surface brightness, & luminosity

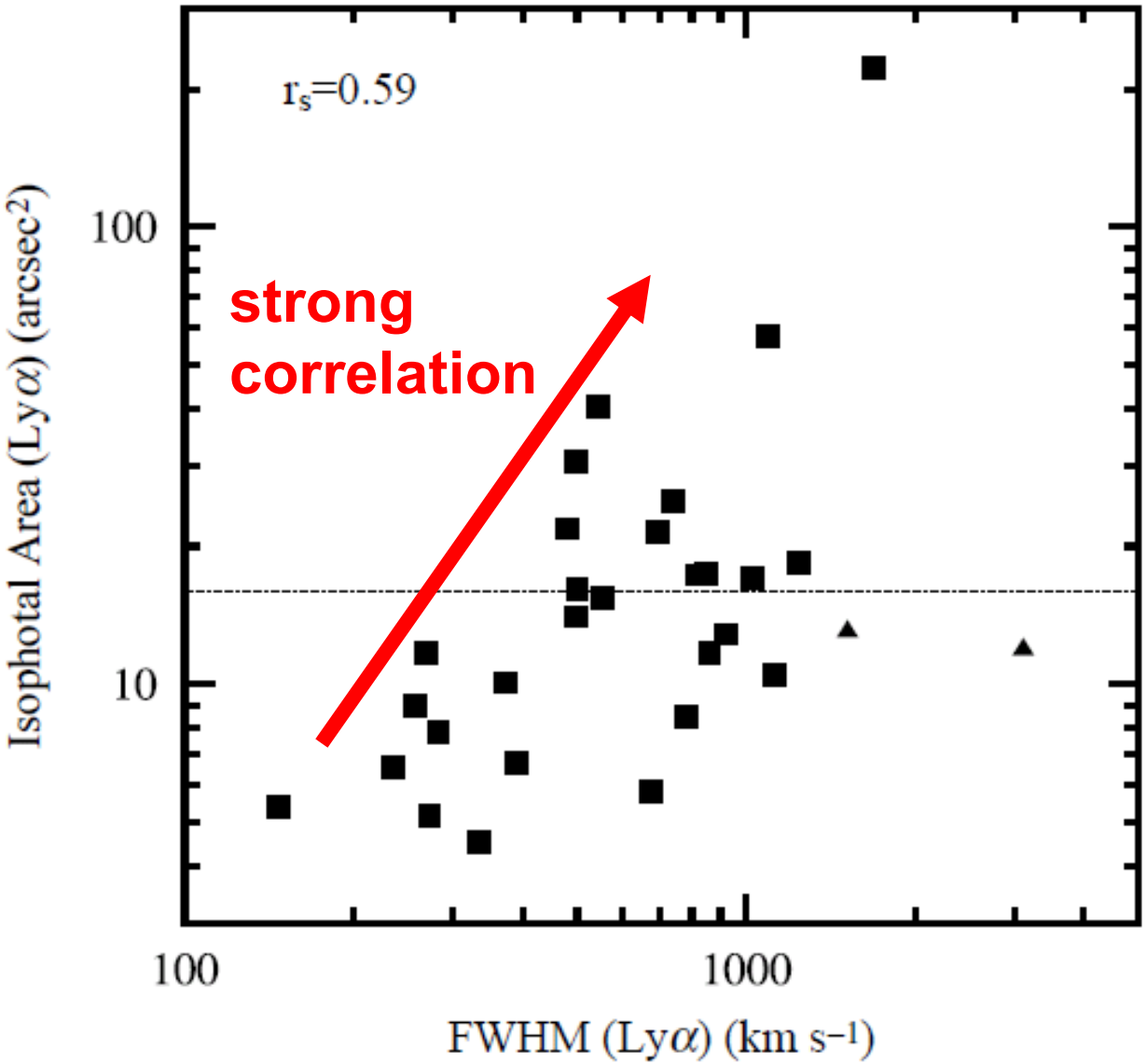
36 **LABs** / **LAEs**

+

1 [OII] emitter



Ly α spatial extent vs Ly α velocity width



LABs (>16arcsec2)
v(FWHM) > 500 km/s

Interpretation of the Lyα velocity width

Case 1 : Motion of gravitationally bounded
gas clouds
dynamical mass (LAB) ~10^{12} - 10^{13} Msun

Case 2 : Gas outflow (superwind)
starburst age several x 10^{7} yr
→ stellar mass (LAB) several x 10^{10} Msun

LABs are hosted in the massive systems!!