



The jet-disc connection in AGN

Sbarrato, Padovani & Ghisellini, 2014, MNRAS, accepted [arXiv:1405.4865]

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in collaboration with P. Padovani (ESO) and G. Ghisellini (INAF-OAB)

Jet & accretion in AGN

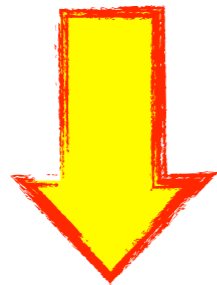
accretion structure vs. relativistic jet

Jet & accretion in ~~AGN~~ blazars!

accretion structure

vs.

relativistic jet



broad line region luminosity:
traces photo-ionizing
luminosity

$$L_{\text{BLR}} \rightarrow L_{\text{ion}} \rightarrow L_{\text{accr}}$$

from optical spectra

gamma-ray luminosity:
traces jet power

$$L_{\gamma} \rightarrow P_{\text{rad}} \rightarrow P_{\text{jet}}$$

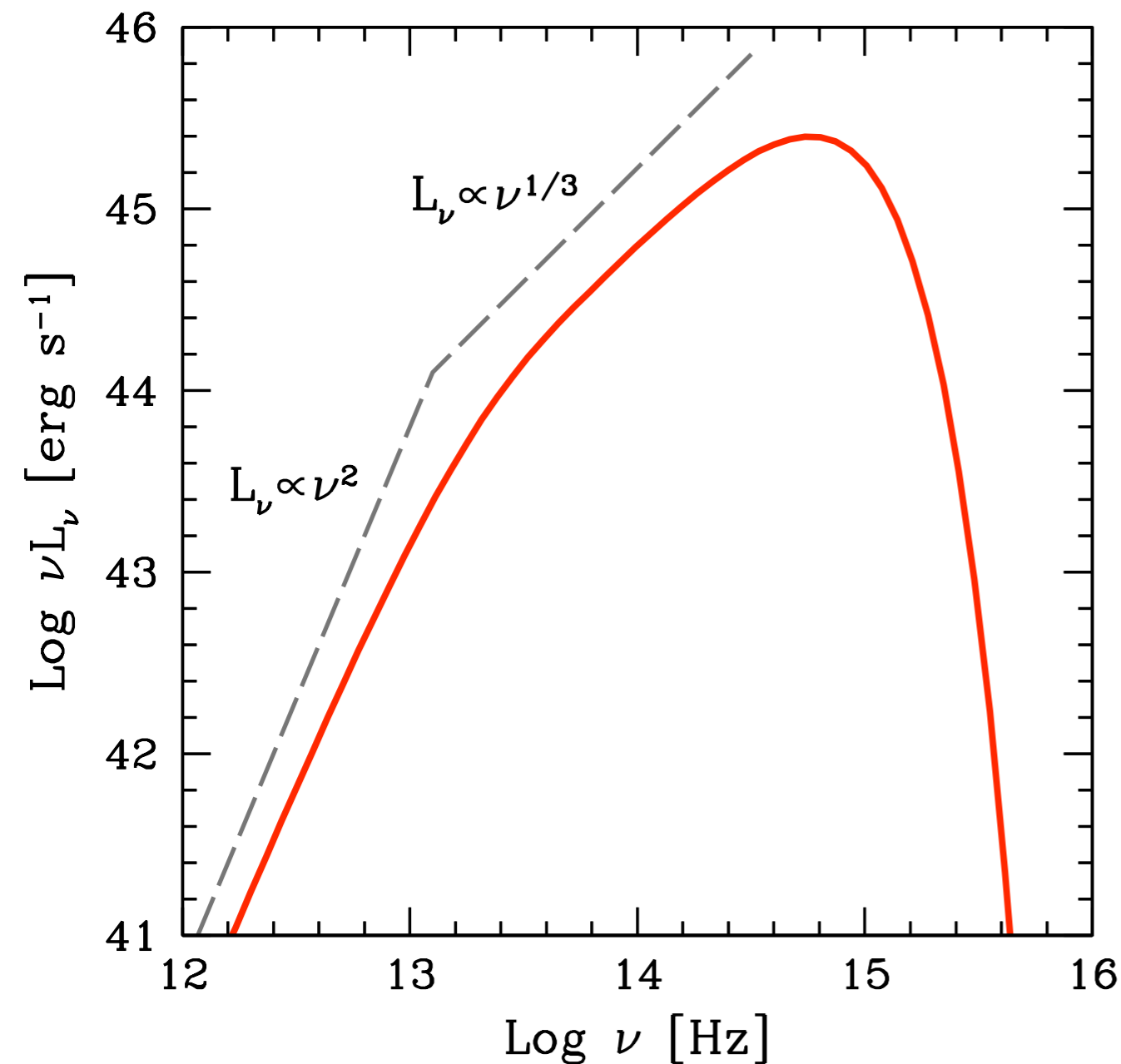
from gamma-ray telescopes

Accretion structures in AGN

radiatively efficient

Shakura-Sunyaev (1973) alpha-disc

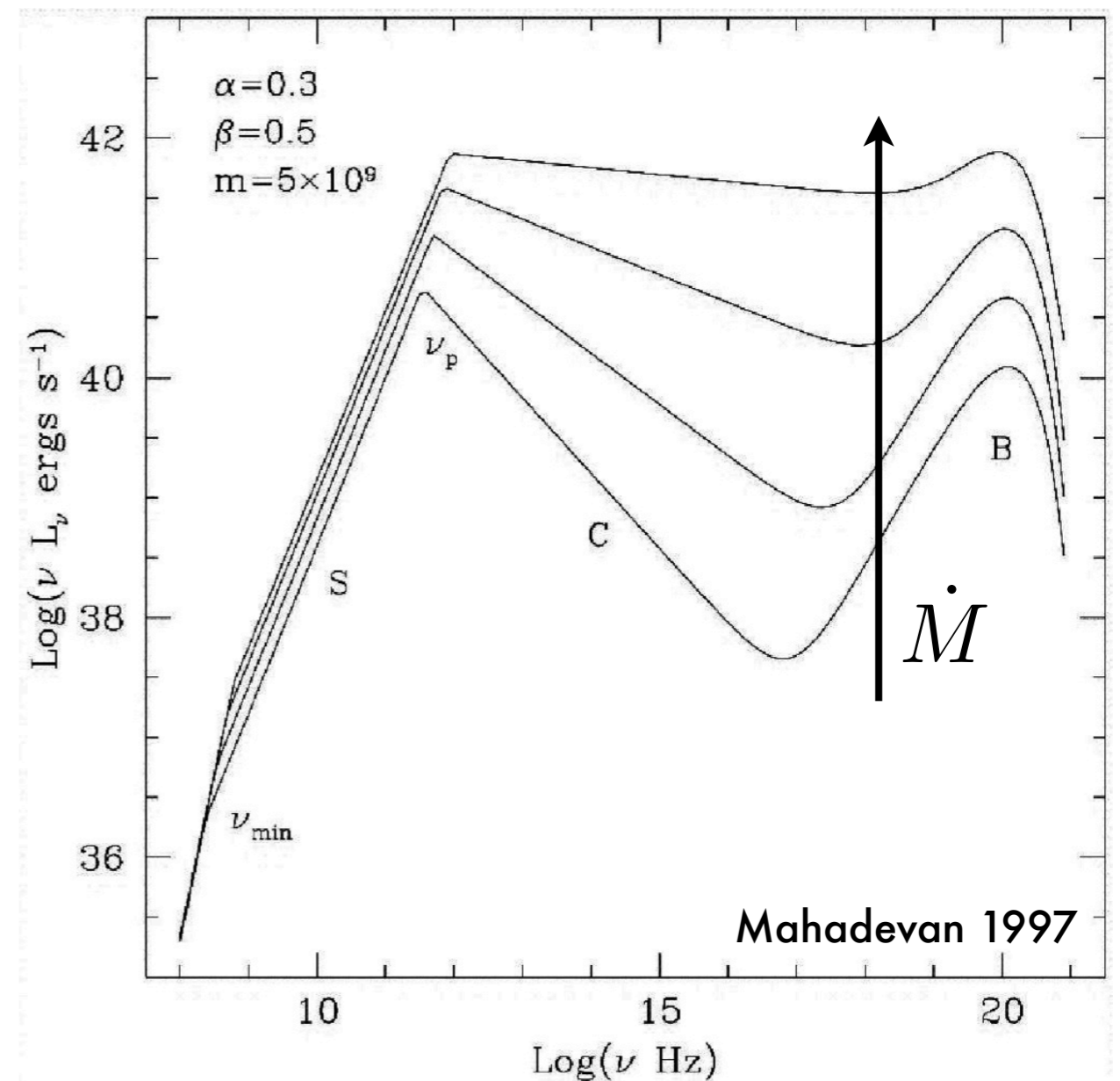
$$L_{\text{disc}} = \eta \dot{M} c^2 \propto \dot{M}$$



radiatively inefficient

advection-dominated accretion flow (ADAF)

$$\eta \propto \dot{M} \rightarrow L_{\text{ADAF}} \propto \dot{M}^2$$

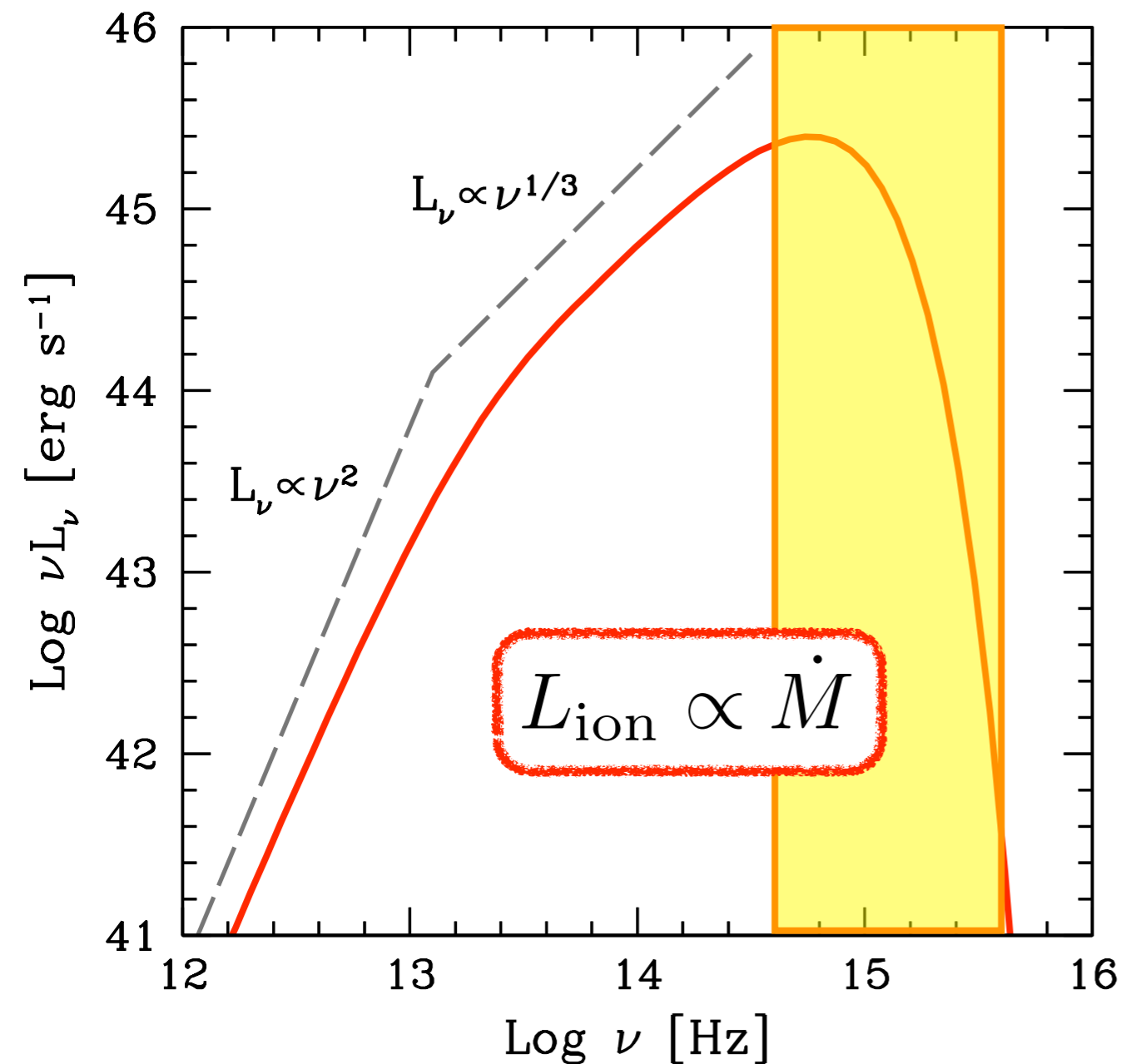


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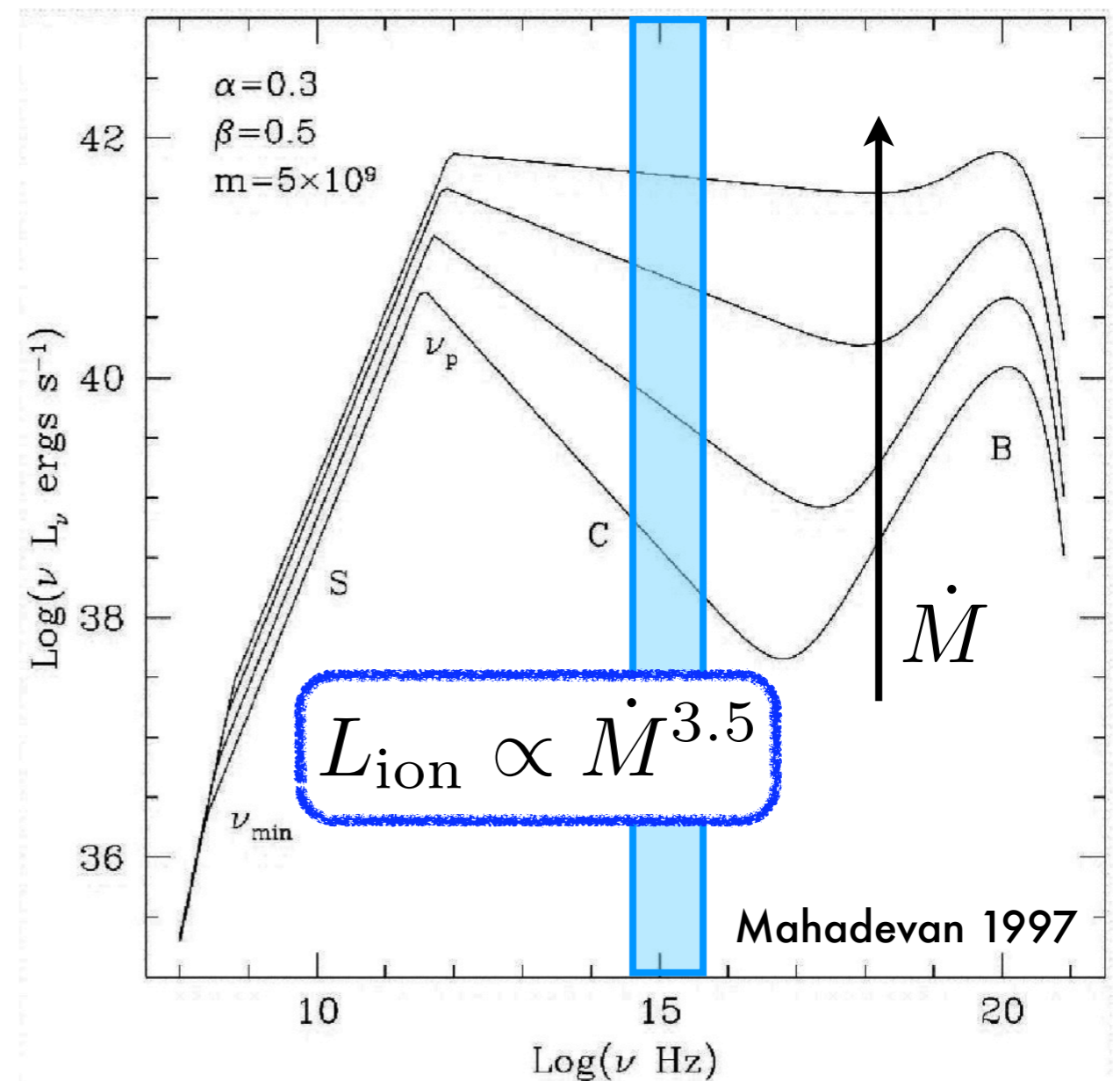
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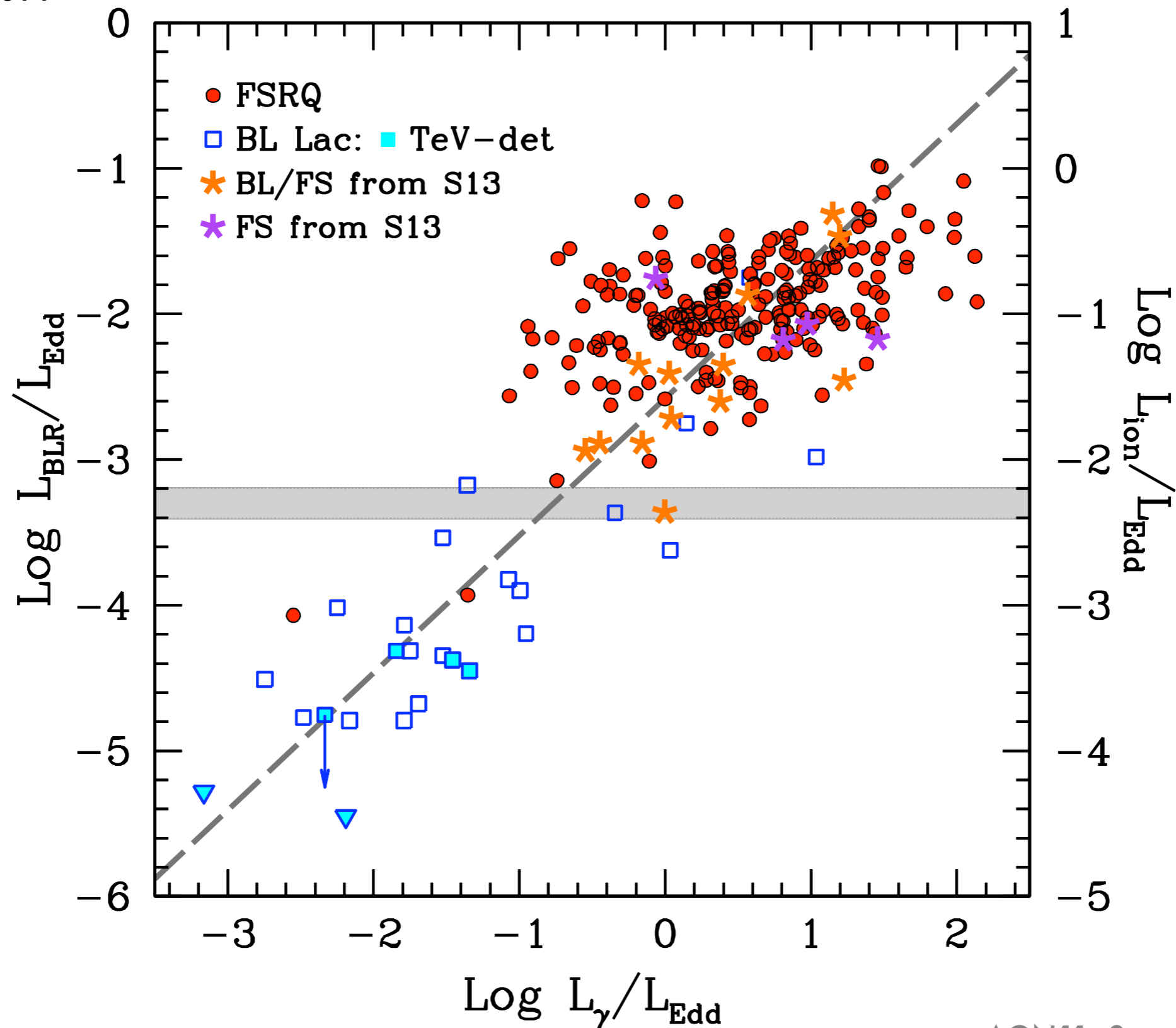


The jet-disc connection in blazars

Sbarrato et al. 2014

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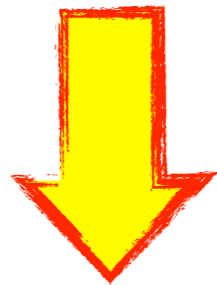


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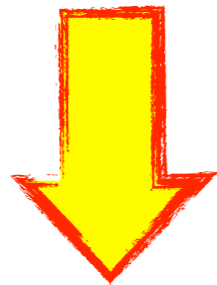
from optical spectra

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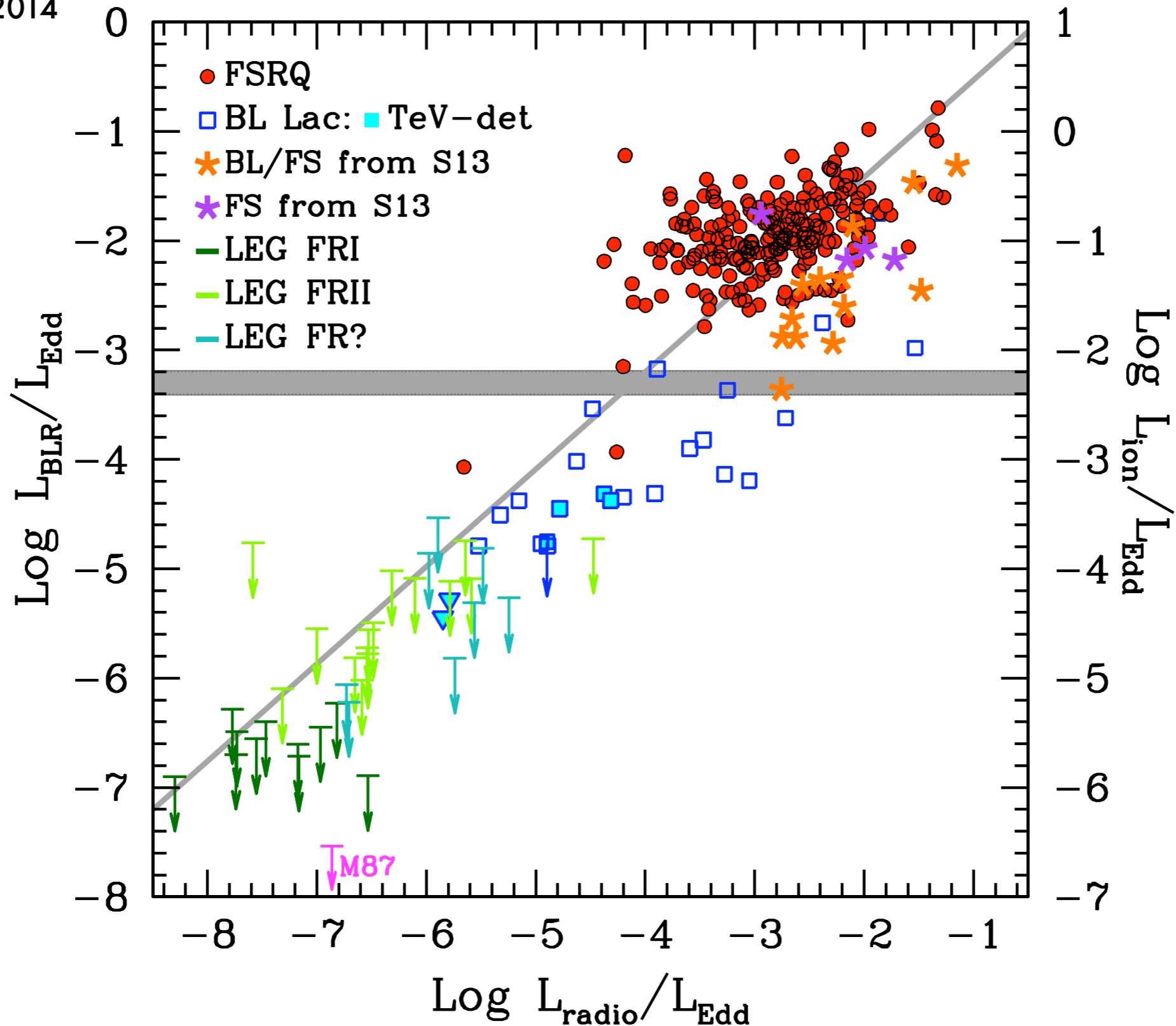
radio luminosity:
traces jet power
in **all jetted AGN!**

$$L_{\text{radio}} \rightarrow P_{\text{jet}}$$

from radio surveys

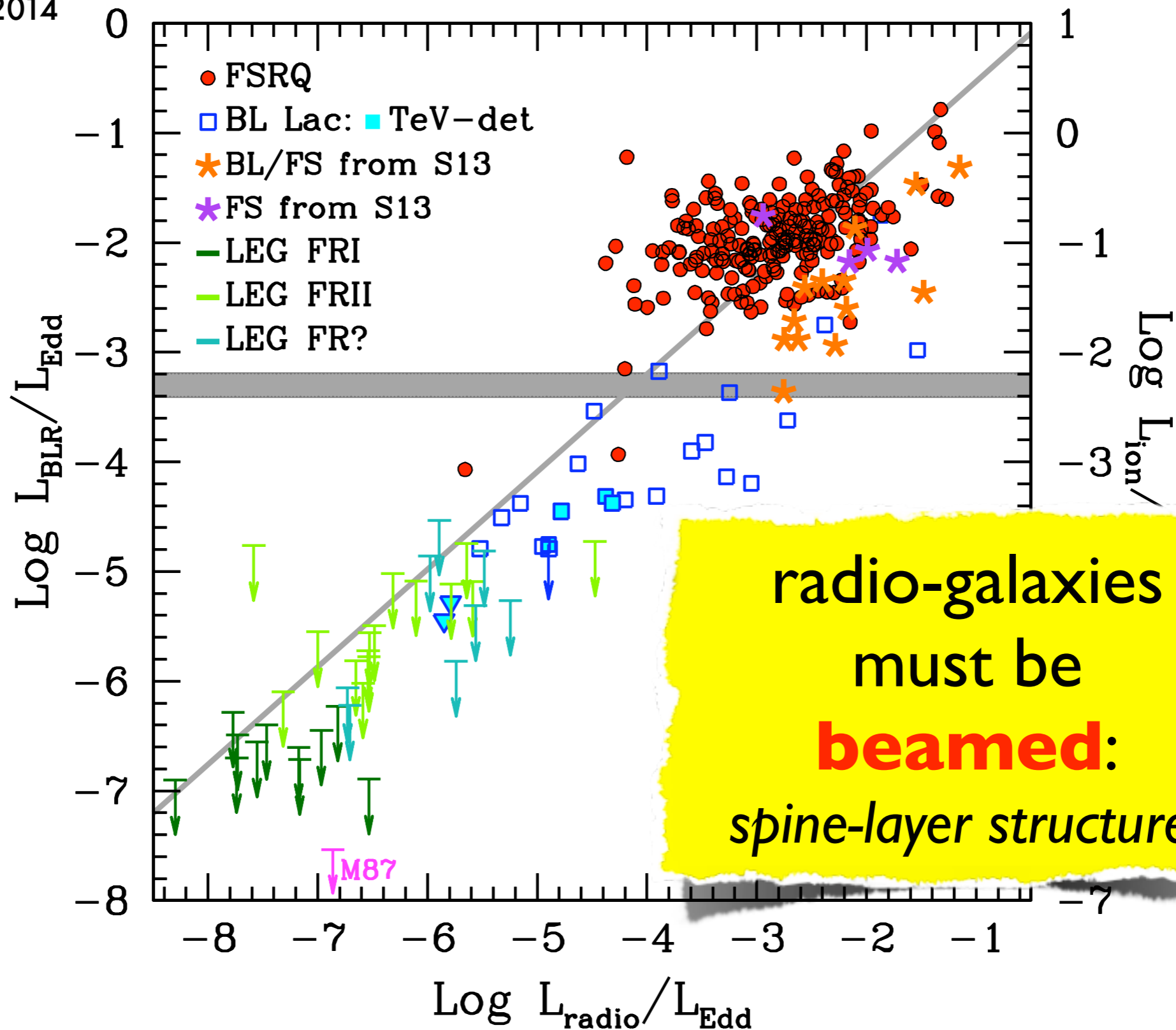
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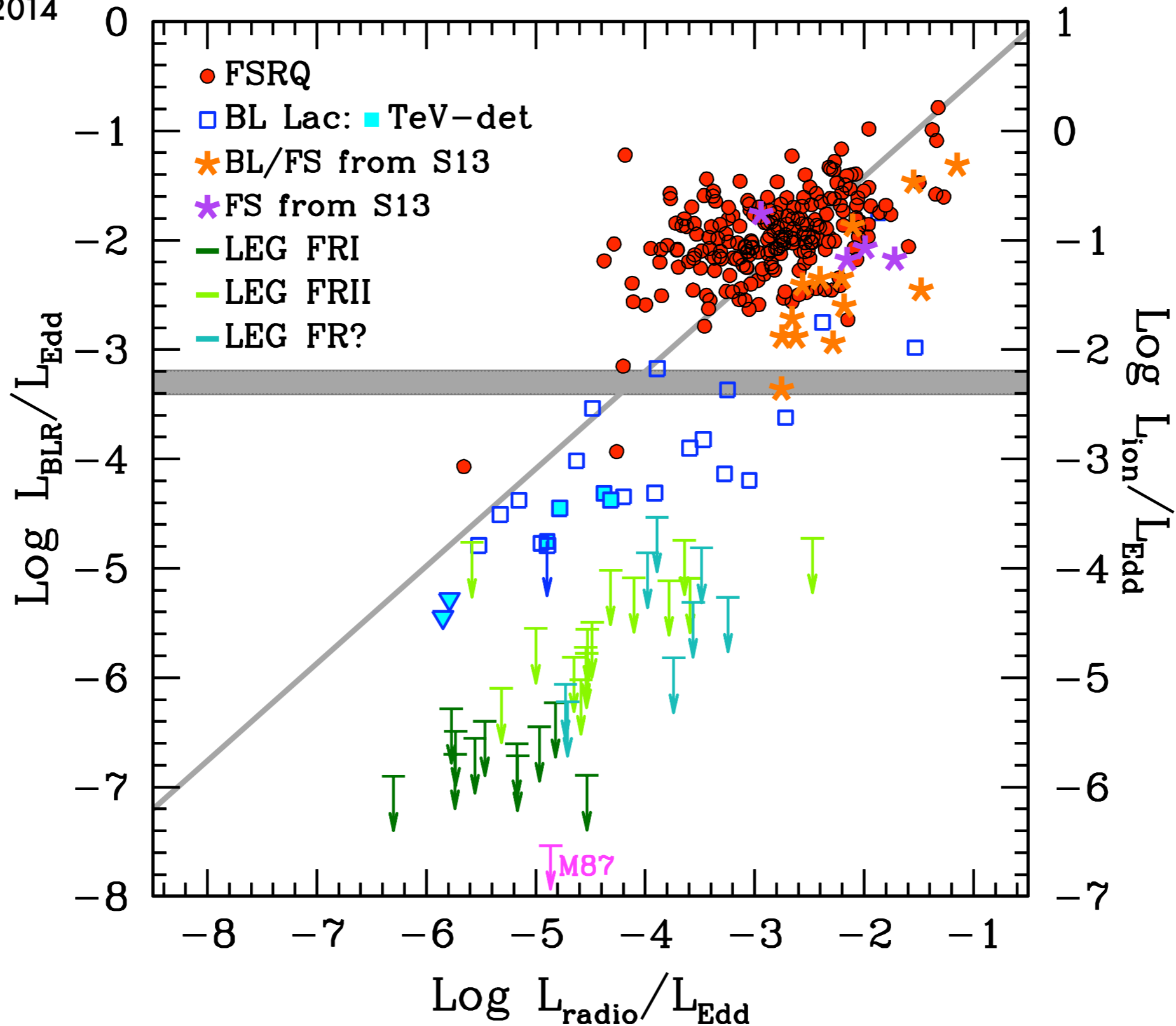
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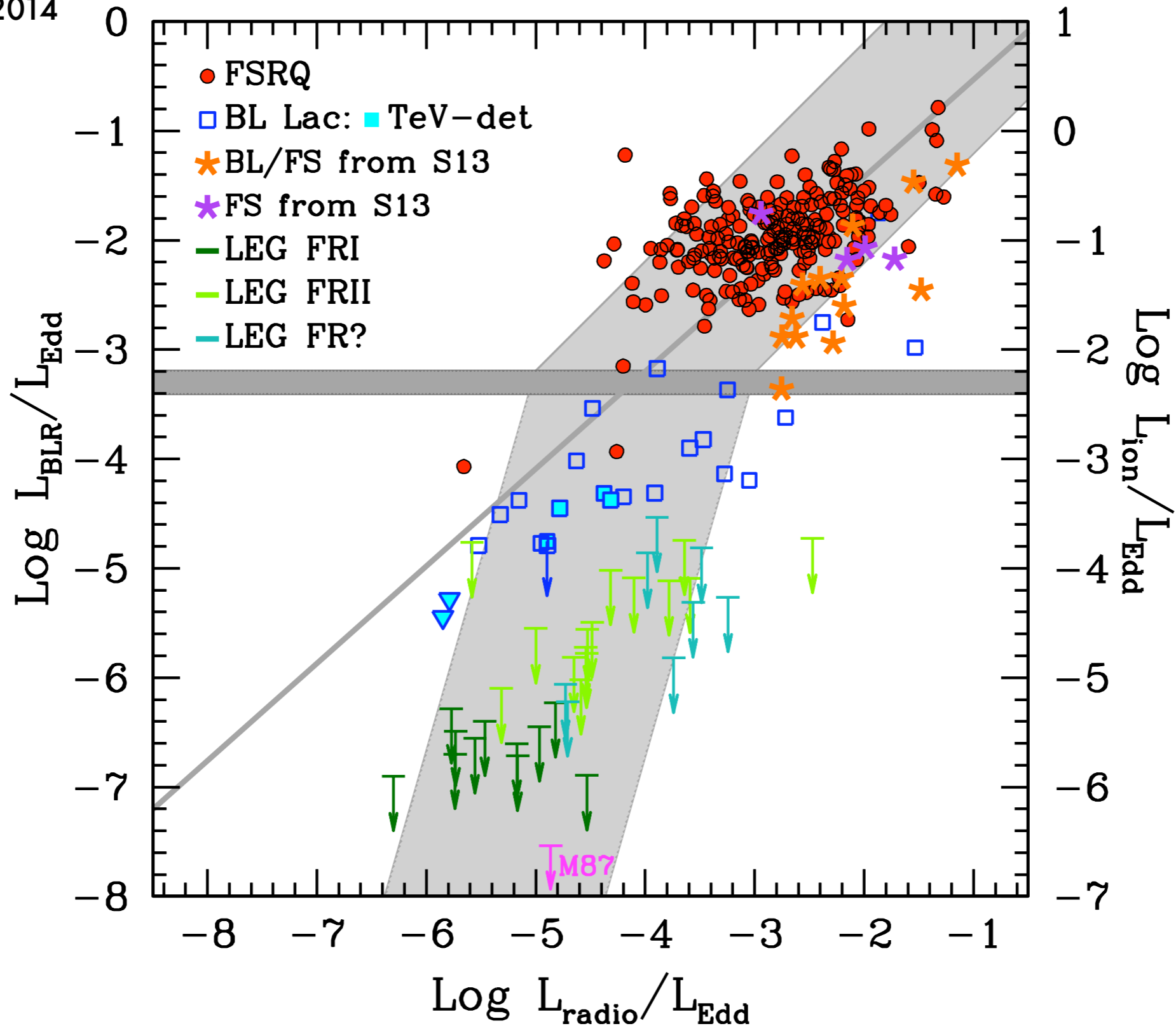
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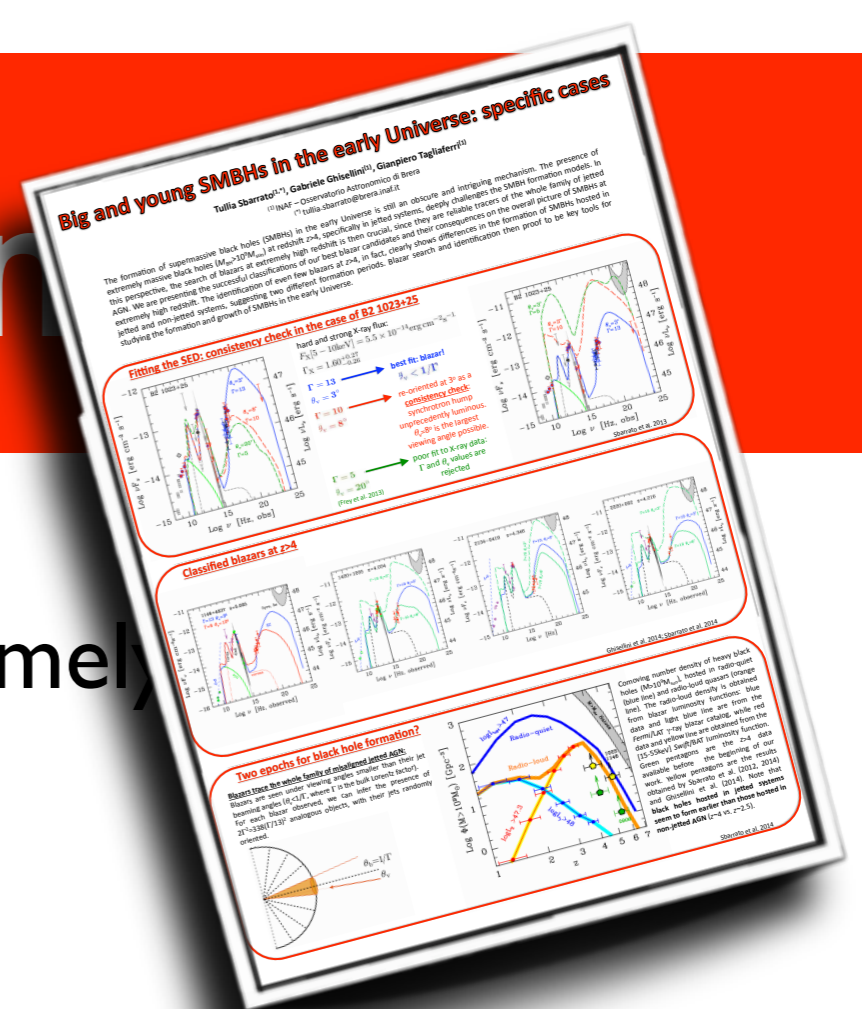
Sbarrato et al. 2014



Conclusions

- blazars do not allow studies on extremely wide accretion ranges: **lack of low-accreting blazars**
- blazars **and** radio-galaxies **together** cover the **transition** between efficient and inefficient accretion regimes
- ionizing luminosity in inefficient accretion regime decreases with a slope steeper than $\propto \dot{M}^2$
Maybe $\propto \dot{M}^{3.5}$?

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