Characterising the closest LINER: Andromeda's bulge

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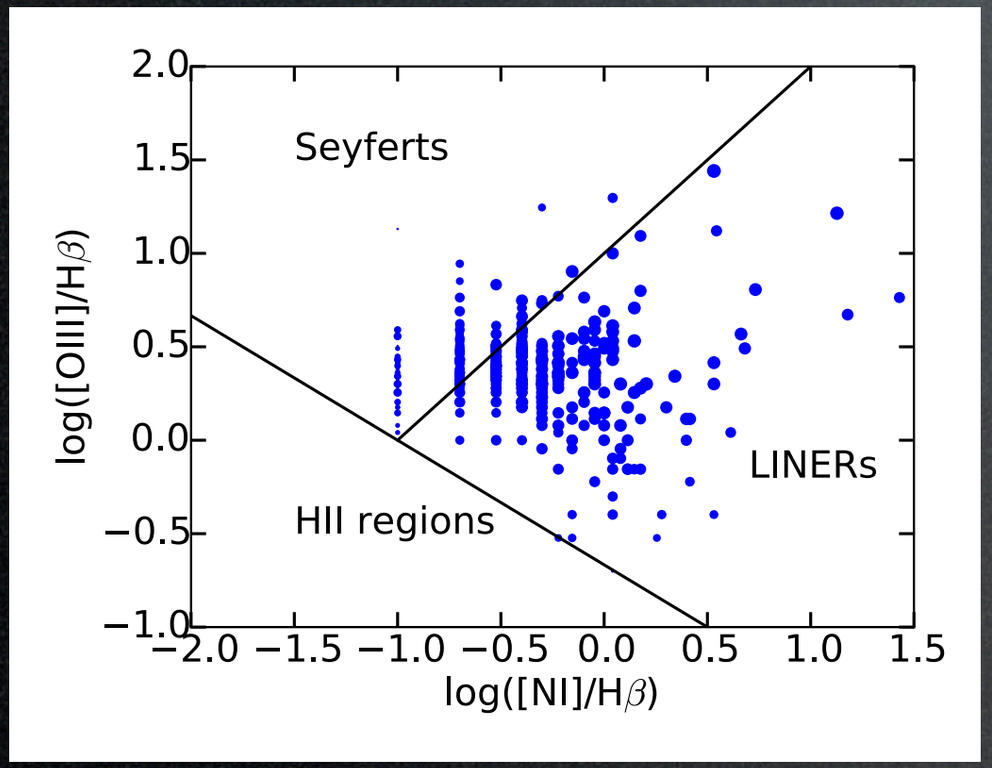


Diagnostic diagram from Saglia+ (2010) data.
The lines are adapted from Sarzi+ (2010).

M31: closest low-power end LINER (Heckman 1996)
"Low-Ionization Nuclear Emission Region"?

M31*: Retired AGN

Very massive black hole 1.4 $10^8 M_{sol}$ (Bender+ 2005)

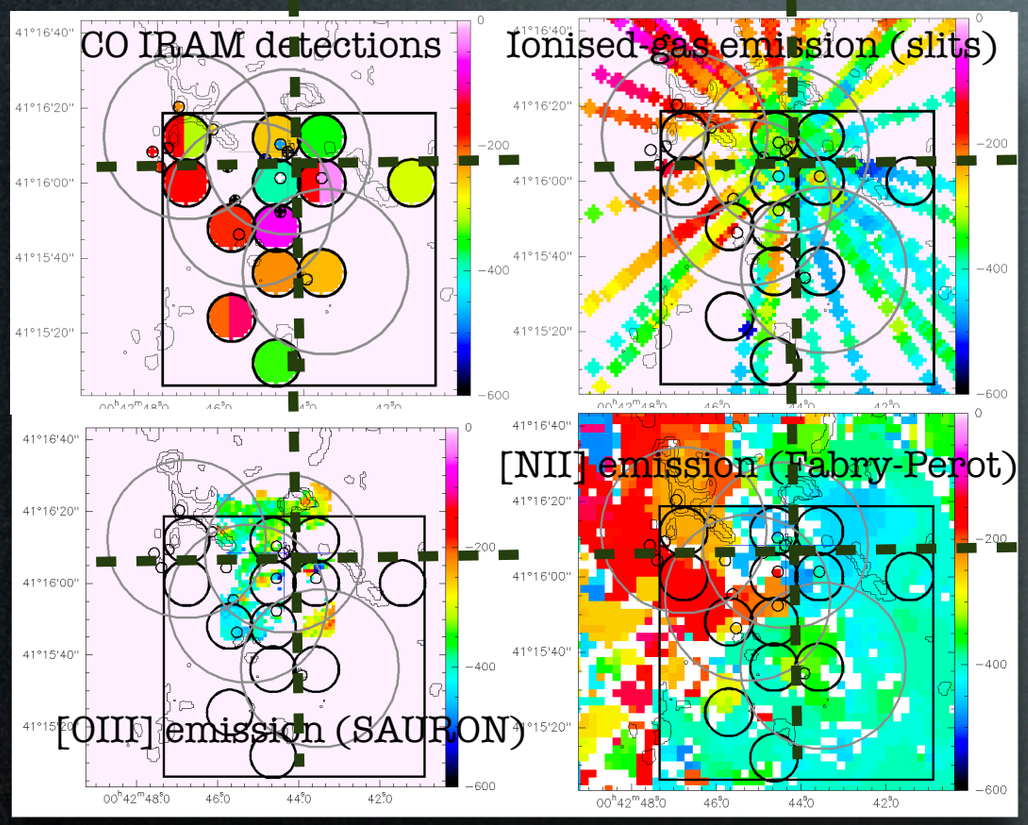
Very little SF $0.25^{+0.06}_{-0.04}$ Msol/year

X-ray source :
10^{-10} L_{edd} with an outburst (x50) in 2006 (Li+ 2011)

+ Diffuse X-ray gas Bogdán & Gilfanov (2008)
+ Diffuse non-thermal radio source Giessübel & Beck (2014)

On the radio-FIR correlation (Walterbos & Graeve 1985)

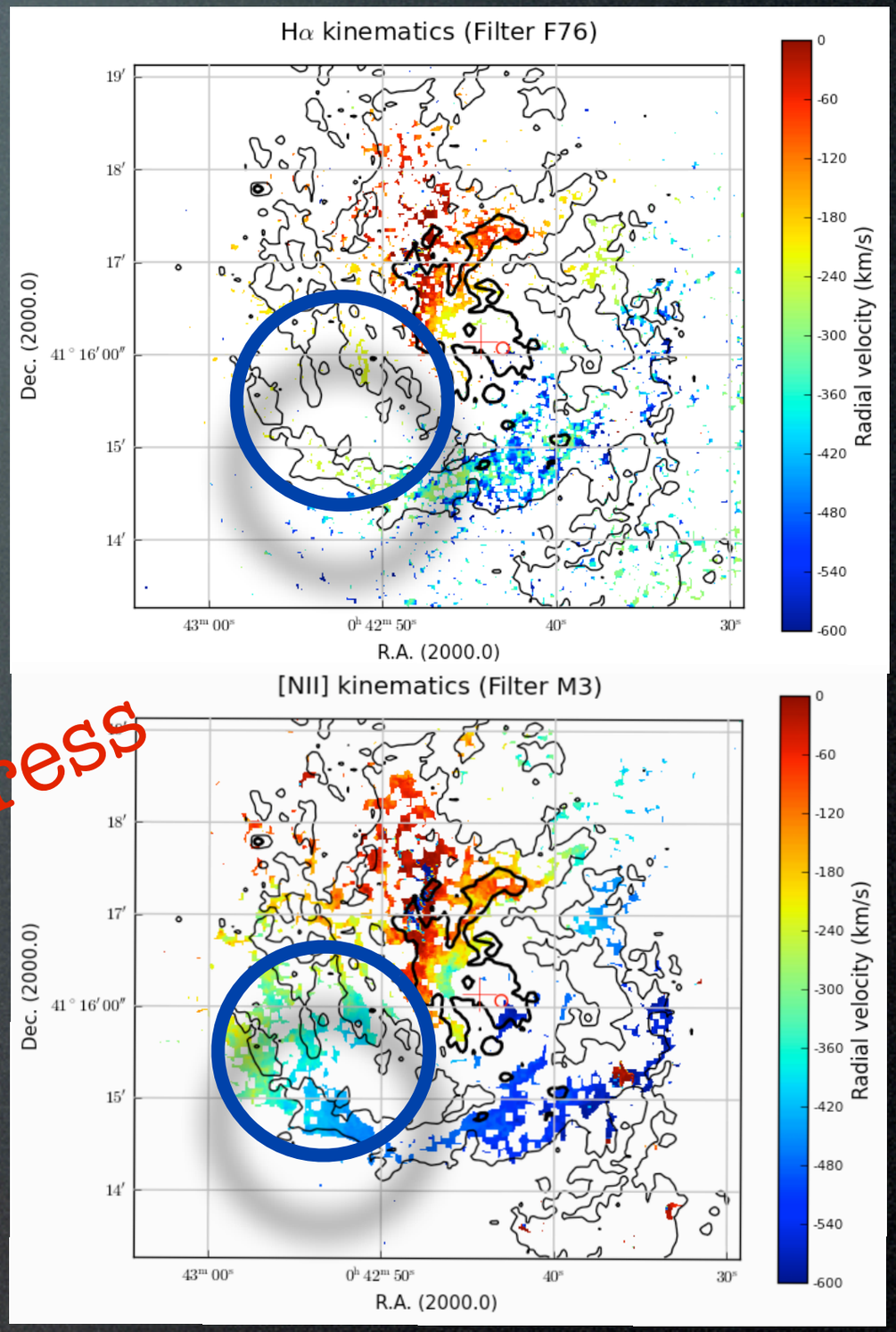
The gas does not rotate around the centre



Pastorello, Sarzi+ (2013)

100'' x 100'' (1,7' x 1,7') 380pc x 380pc

Velocity fields



New Fabry-Perot observations from Mont-Mégantic (Canada)

Halpha < [NII] since Rubin & Ford (1971)

Excess of [NII] due to high metallicity (Pilyugin+ 2016)

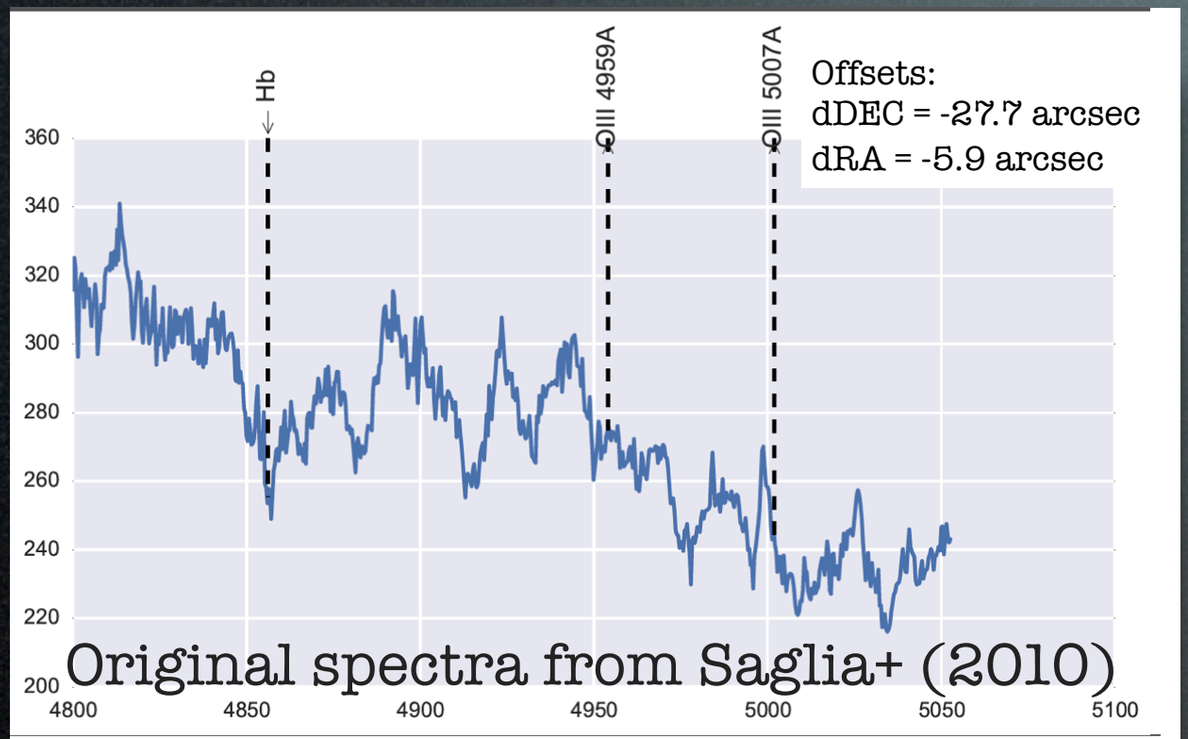
Evidence of shocks ? (Alatalo+2016)

HOLMES (HOt Low-Mass Evolved Stars)? (Cid-Fernandez+2011)

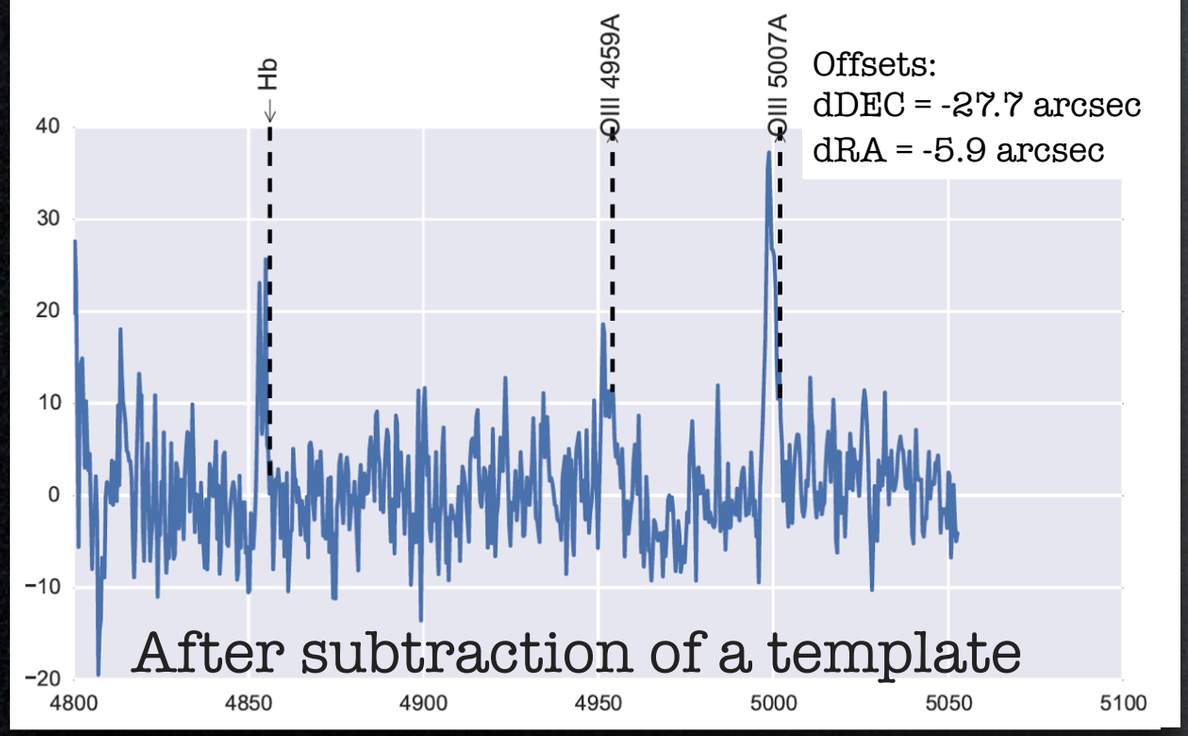
Halpha deficit due to strong absorption of the stellar continuum ?

Fake or real LINER?

Absorption of the stellar continuum in Hbeta



Original spectra from Saglia+ (2010)



After subtraction of a template

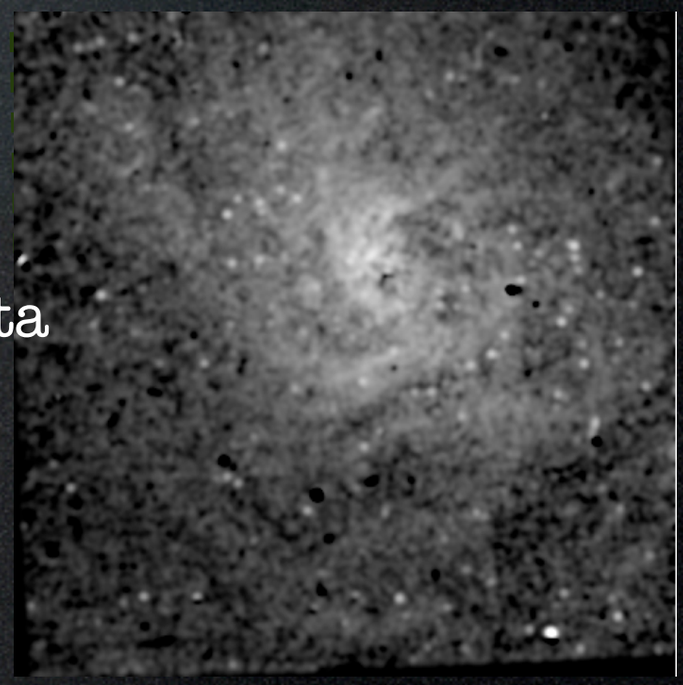
Difficulties which could also affect other "nearby galaxies"

- large metallicity (lack of reliable templates)
>> template mismatch?

- strong stellar continuum due to the bulge
>> relatively weak Balmer lines

- lack of spatial resolution (except in M31) (e.g. Yan & Blanton 2012)
>> dilution of the signal

SITELLE@CFHT
[OIII] preliminary data
1h, R=500



Perspective:
new observations with SITELLE on CFHT during the 2nd semester 2016