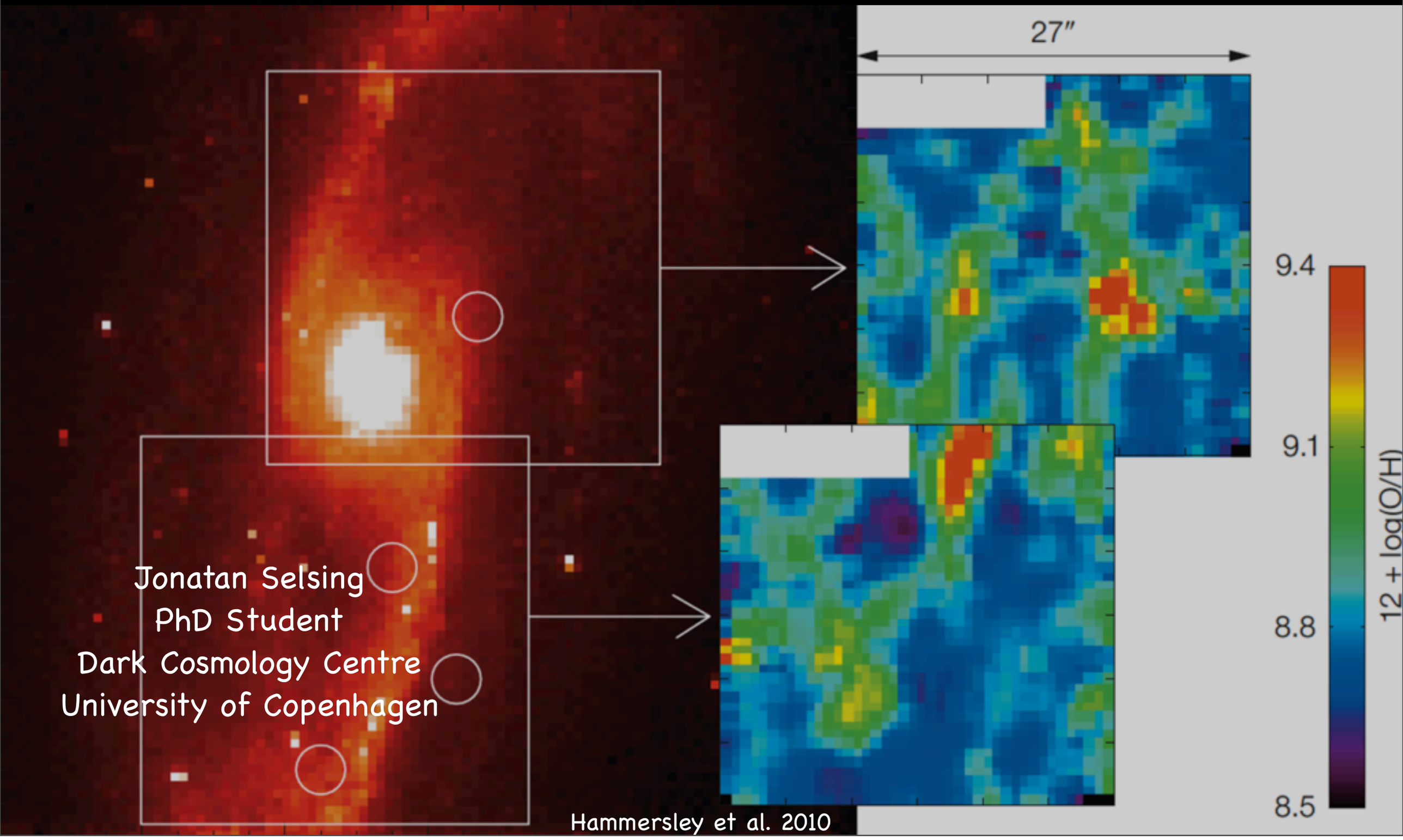
Integral Field Spectroscopy of SN Ic/Ic - BL hosts



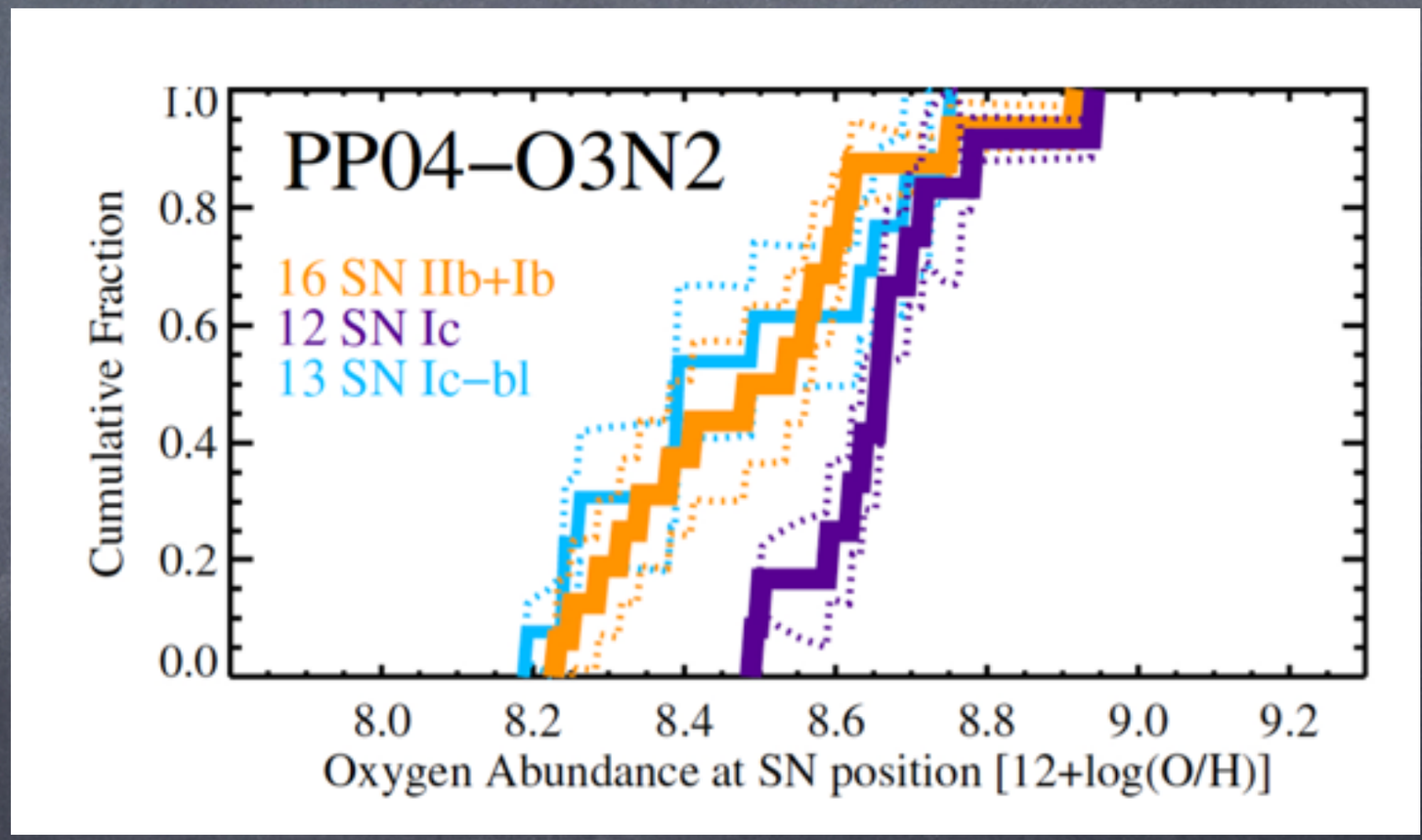
Jonatan Selsing
PhD Student
Dark Cosmology Centre
University of Copenhagen

Motivation

- What distinguishes a GRB progenitor from that of an ordinary SN Ic-bl without a GRB
- Investigate metallicity trends
- Constrain progenitor masses
- Study effect of local variations in host galaxy parameters

Metallicity Trends

- SNe Type Ic lie in systematically more metal rich environments than other types of core collapse explosions



Modjaz, M. et al. 2011

Metallicity Trends

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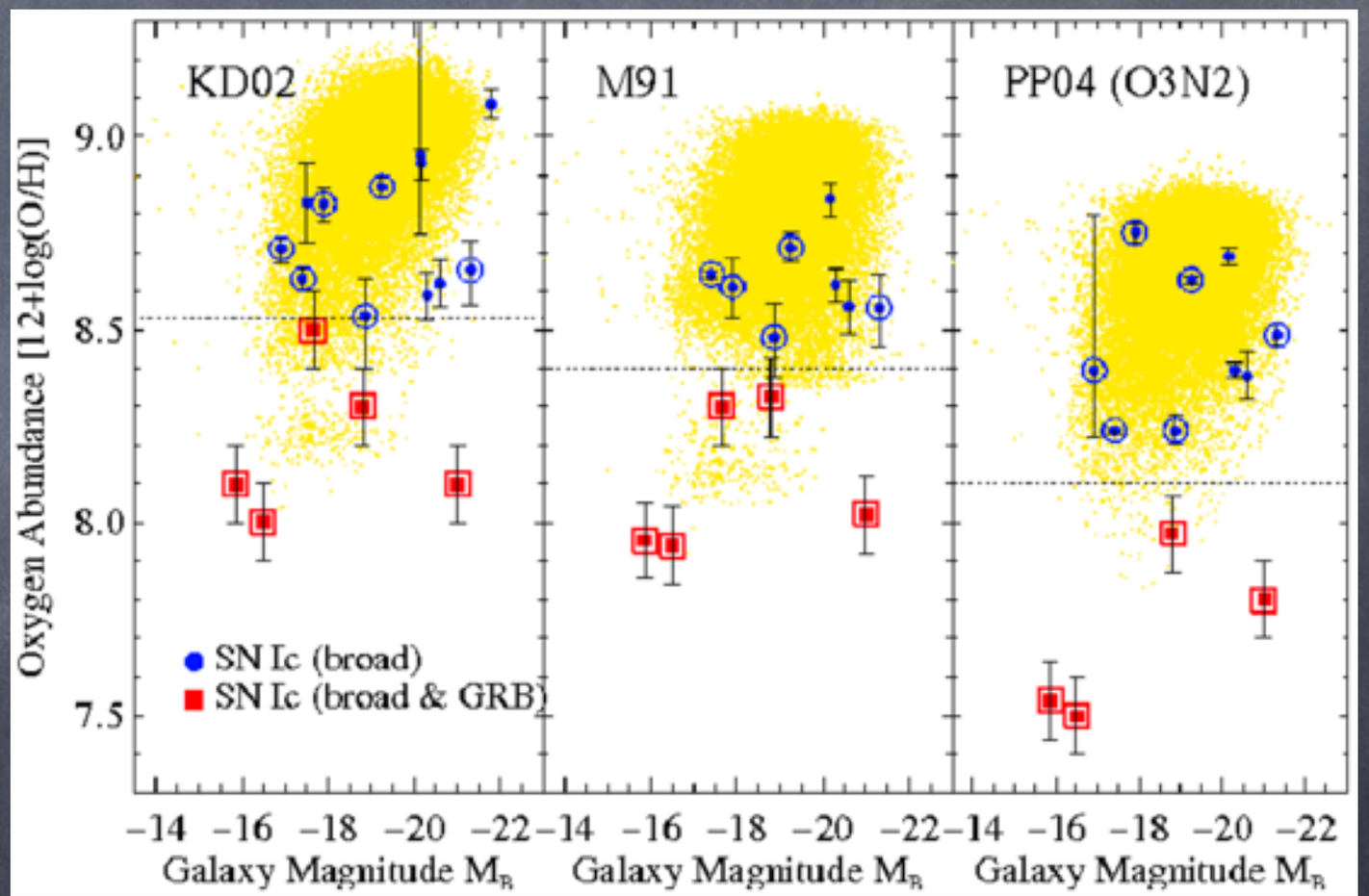
- SN Ic-bl without observed GRBs lie in systematically more metal rich environments than SNe with GRBs



Modjaz, M. et al. 2008

Metallicity Trends

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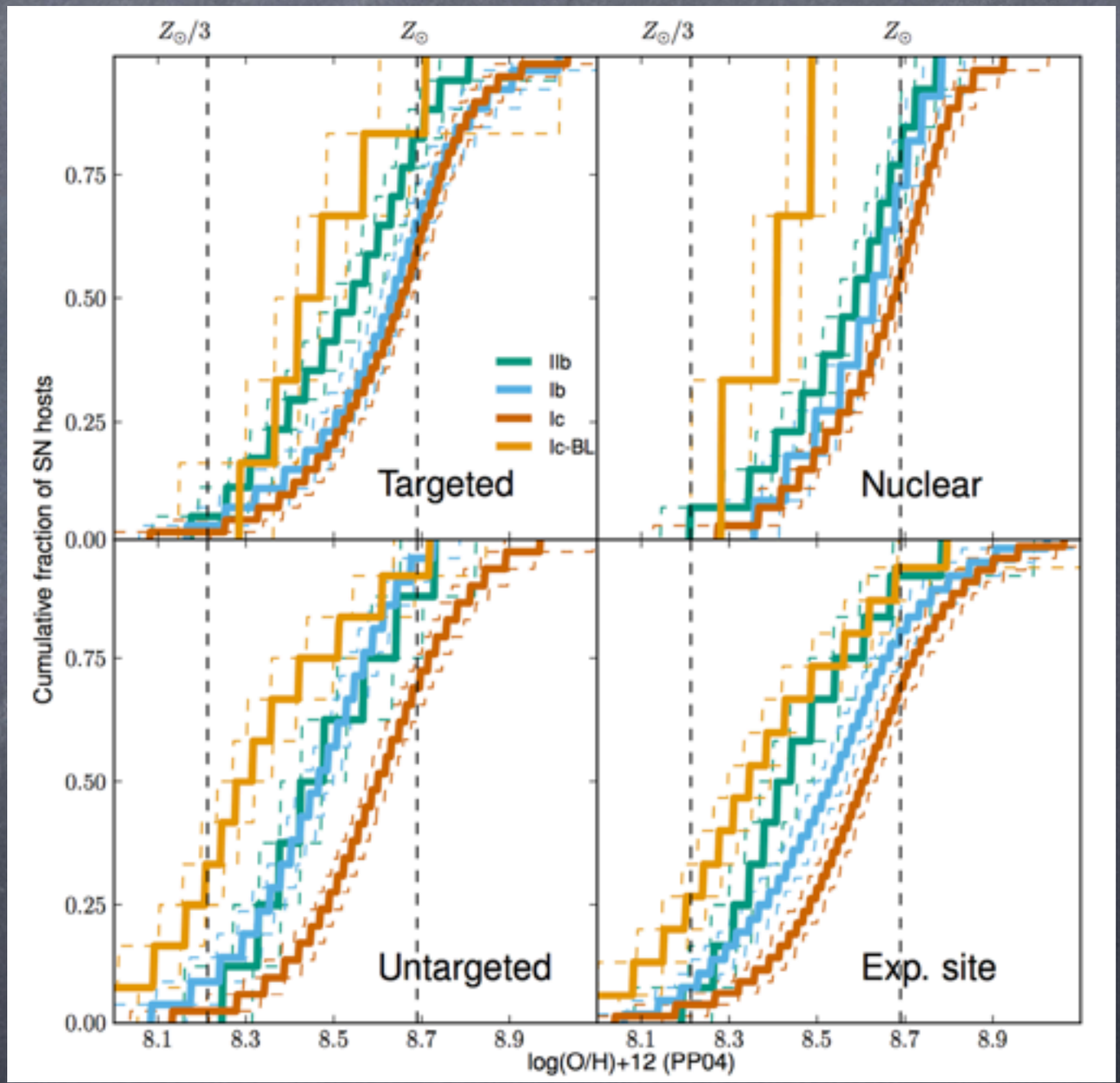
- Biases can affect the metallicity trends investigated



Sanders et al. 2012

Metallicity Trends

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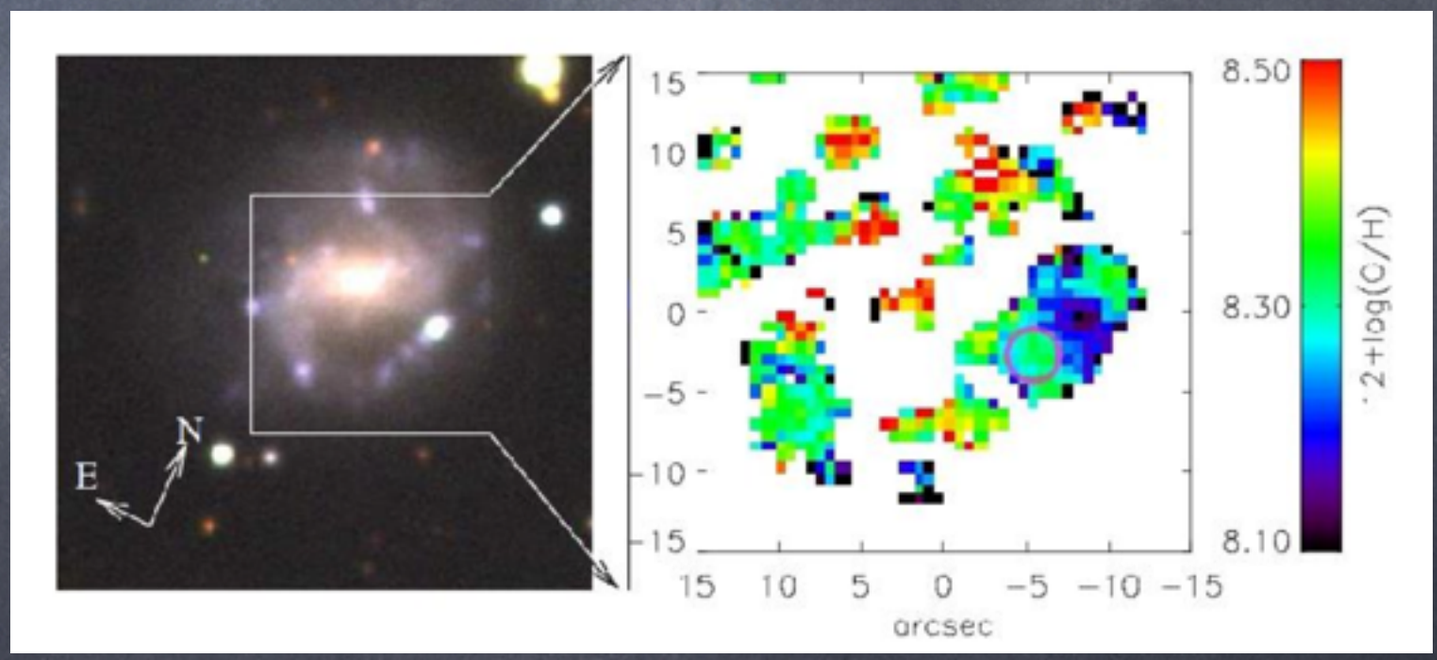
- IFS is a possibility to probe local environments



Christensen, L. et al. 2008

Metallicity Trends

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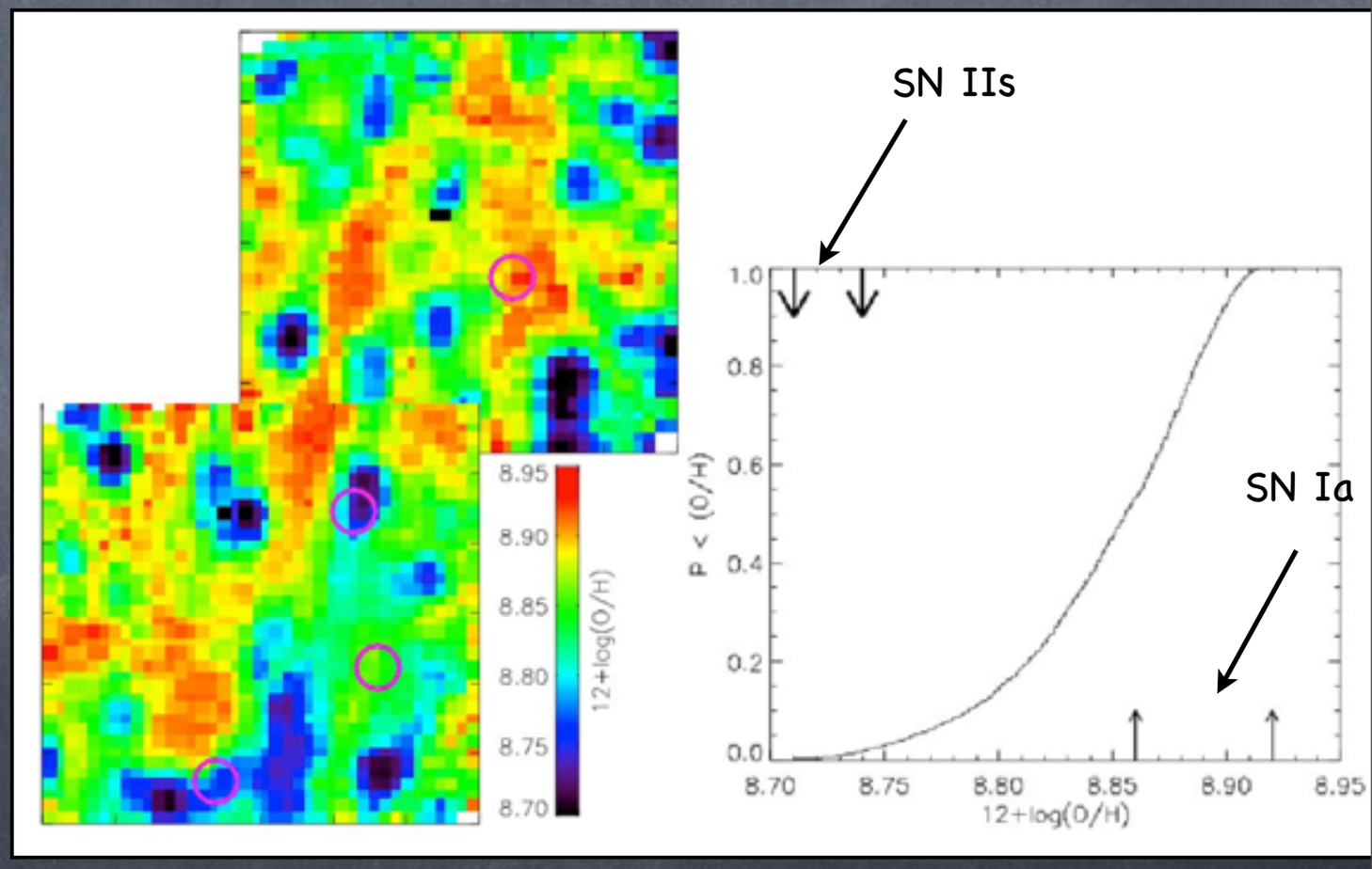
- IFS is a possibility to probe local environments

- Environmental differences for SNe



Hammersley et al. 2010

Sample

- 16 Targets observed with VIMOS
- Host of both Ic (9) and Ic -BL (7) hosts
- Targeted (7) and non-targeted (9) hosts
- Spatially resolved - 250 pc resolution

Hosts targeted

SN1996D T,Ic
SN1997B T,Ic
SN1999cn T,Ic
SN2004fe T,Ic
SN2006ck T,Ic
SN2003jd T,Ic-BL
SN1998ey T,Ic-BL
SN2004bu T,Ic-BL
SN2006ip non-T,Ic
SN2007fj non-T,Ic
SN2007hn non-T,Ic
SN2009bh non-T,Ic
SN2005ks non-T,Ic-BL
SN2006qk non-T,Ic-BL
SN2007I non-T,Ic-BL
SN2007gx non-T,Ic-BL

To be Measured Parameters

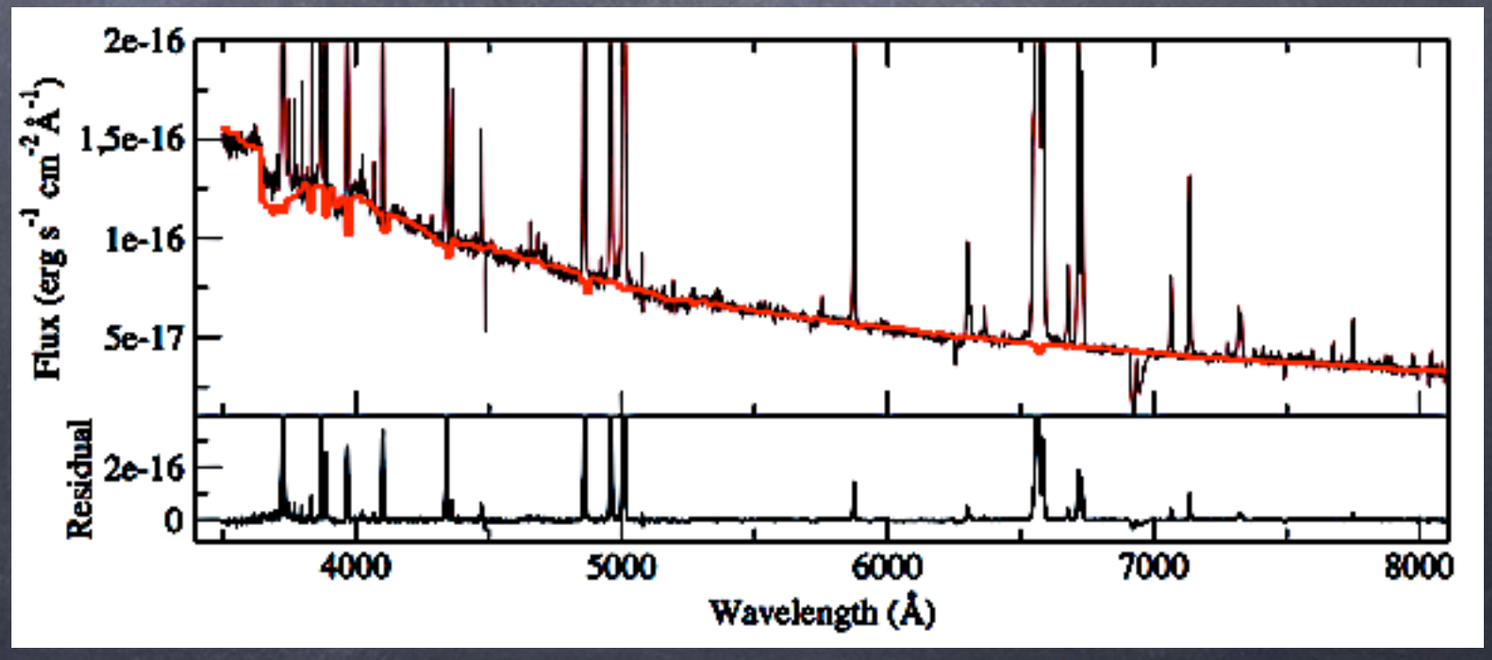
- Extinction ⟶ Balmer Decrement
  $H\alpha / H\beta = 2.86$

To be Measured Parameters

- Extinction
- Metallicity ⟶ Strong Line Diagnostics
  N2 : log([Nii]/Hα)
  O3N2 : log[([Oiii]/Hβ)/([Nii]/Hα)]

To be Measured Parameters

- Extinction
- Metallicity
- Stellar ages of the HII regions



E. Pérez-Montero et al. 2010

To be Measured Parameters

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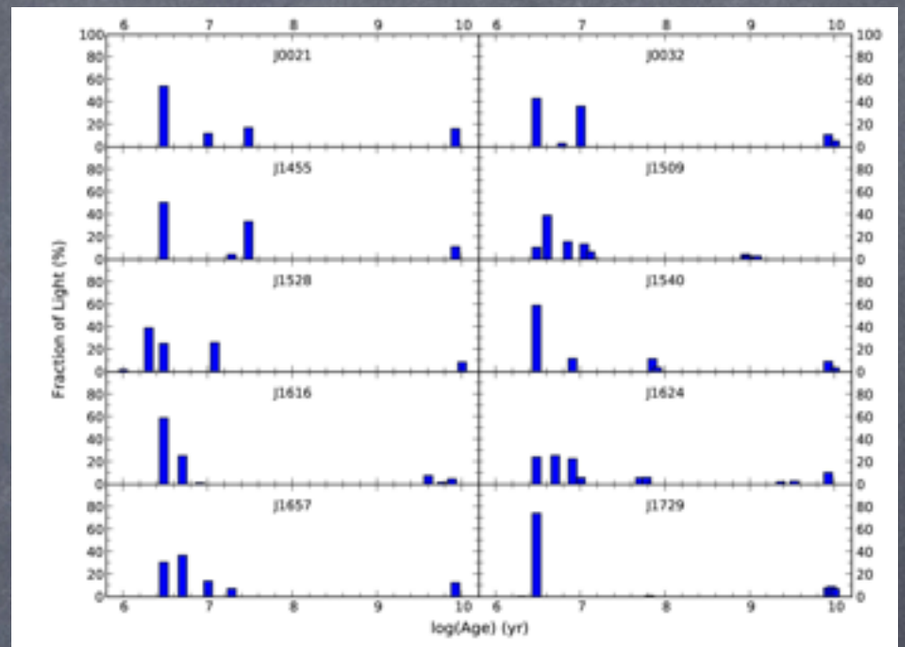
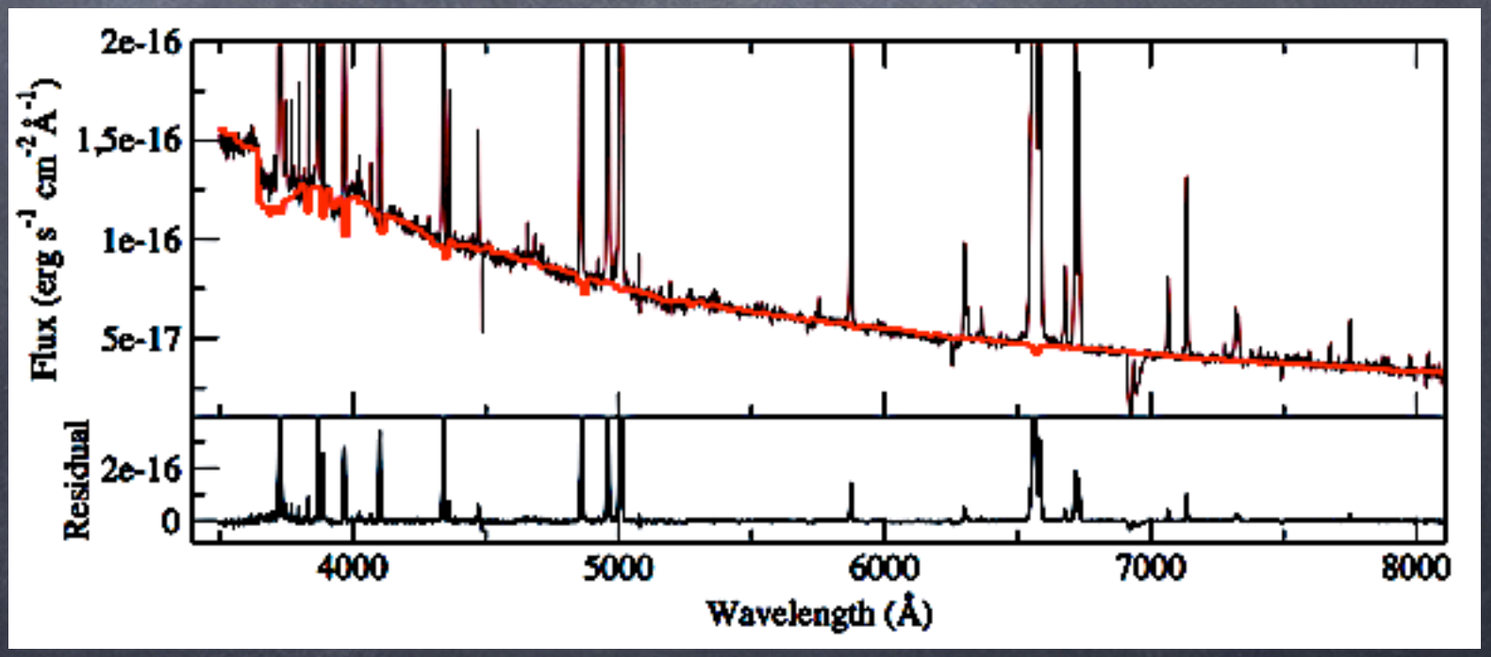
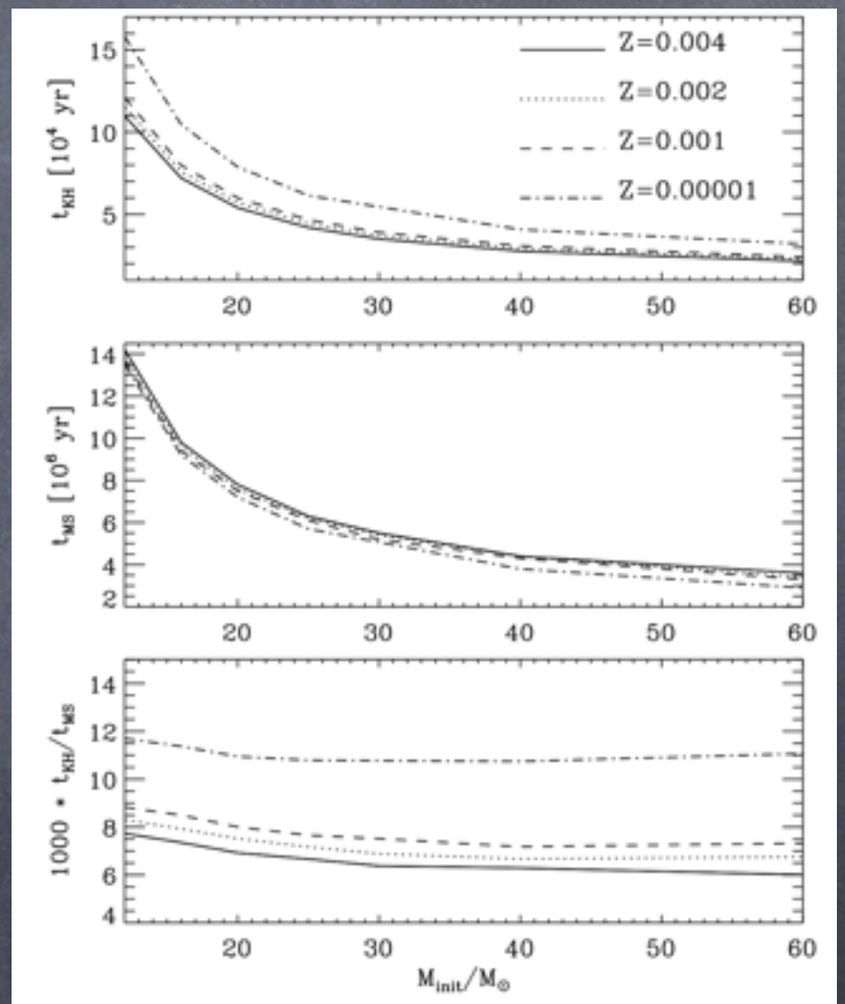




E. Pérez-Montero et al. 2010

To be Measured Parameters

- Extinction
- Metallicity
- Stellar ages of the HII regions
- Stellar masses of progenitors



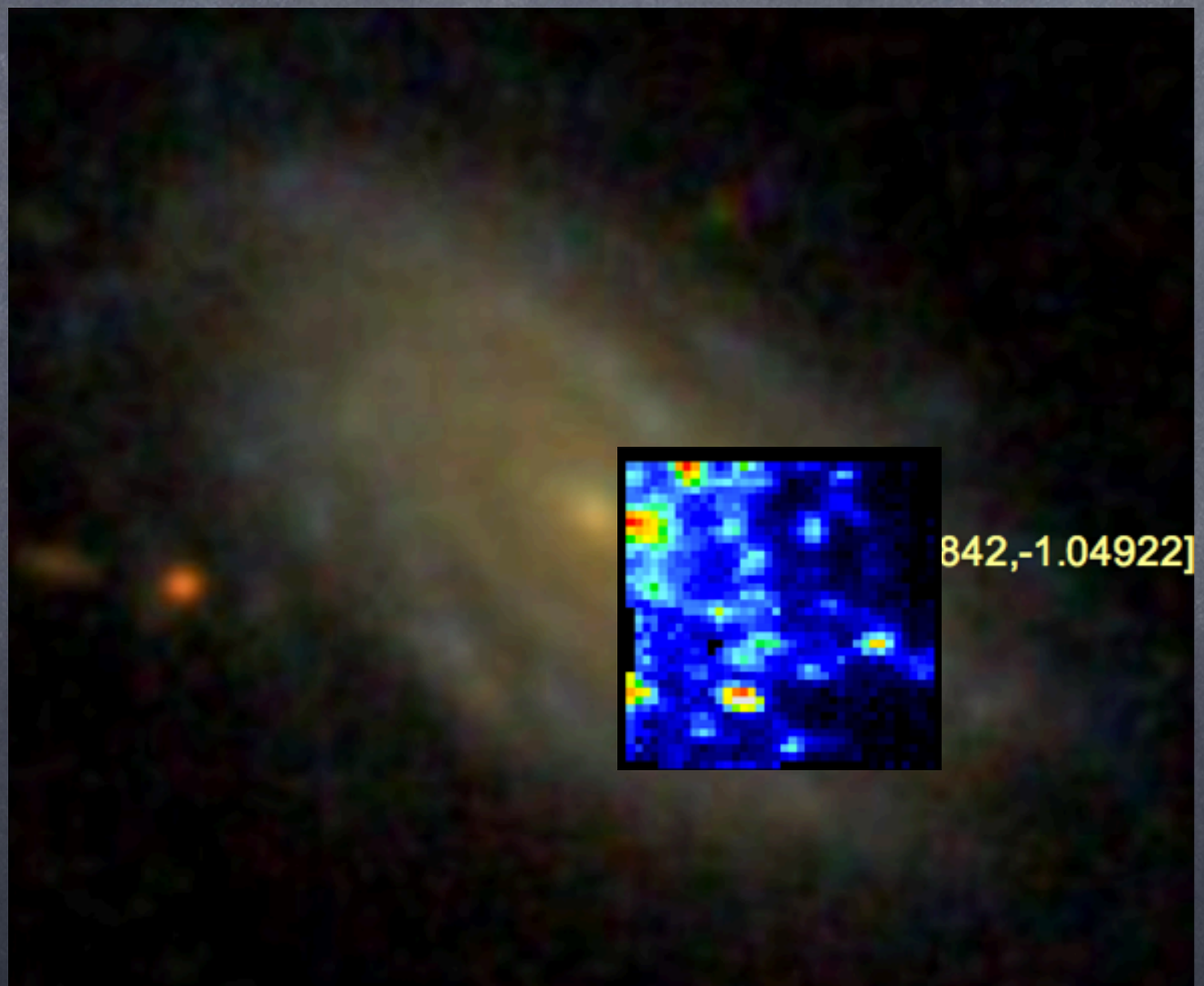
S.-C. Yoon et al. 2006

A work in progress

SN2006ck(SN Ic) Host

A work in progress

SN2006ck(SN Ic) Host



A work in progress

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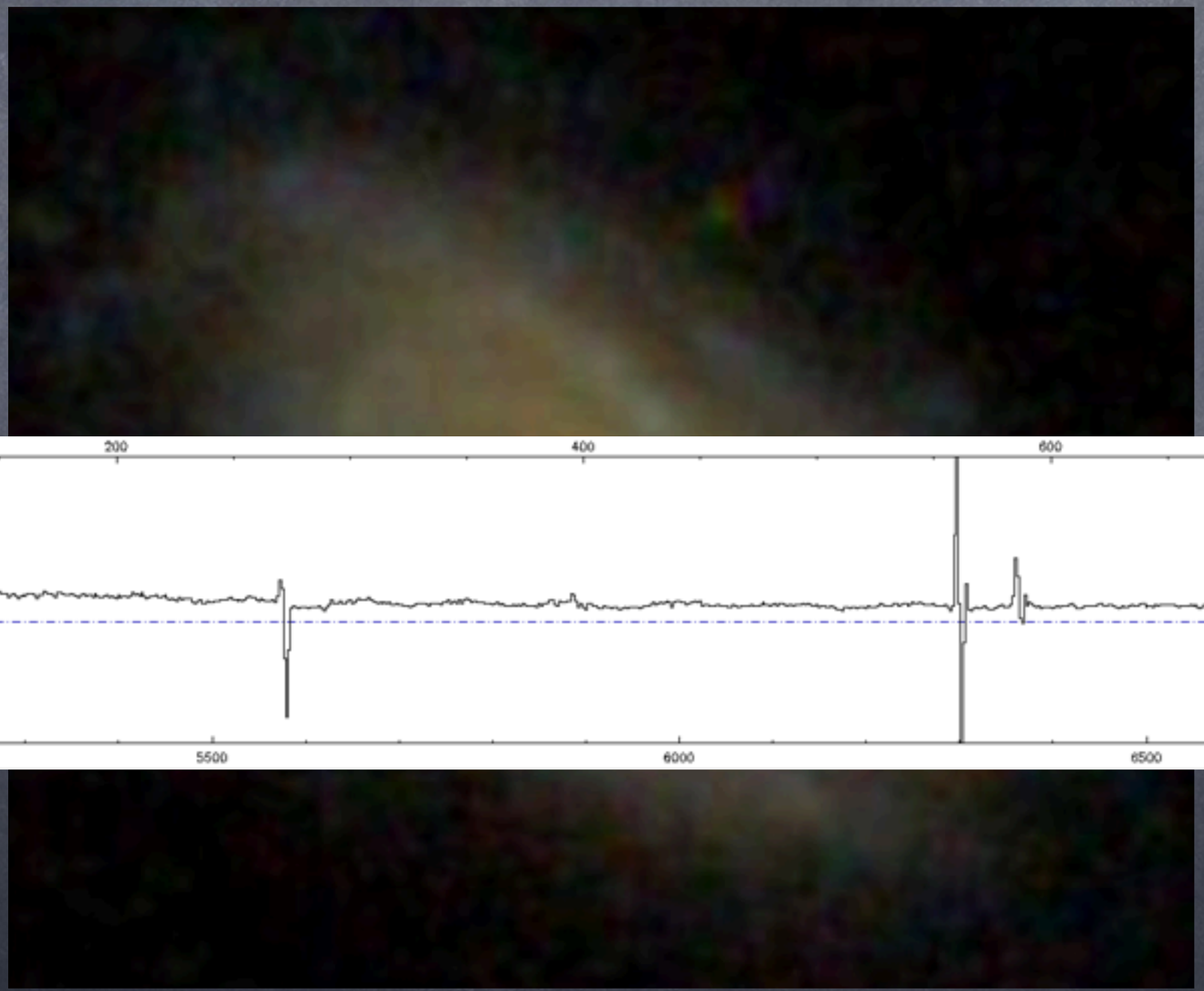

A work in progress

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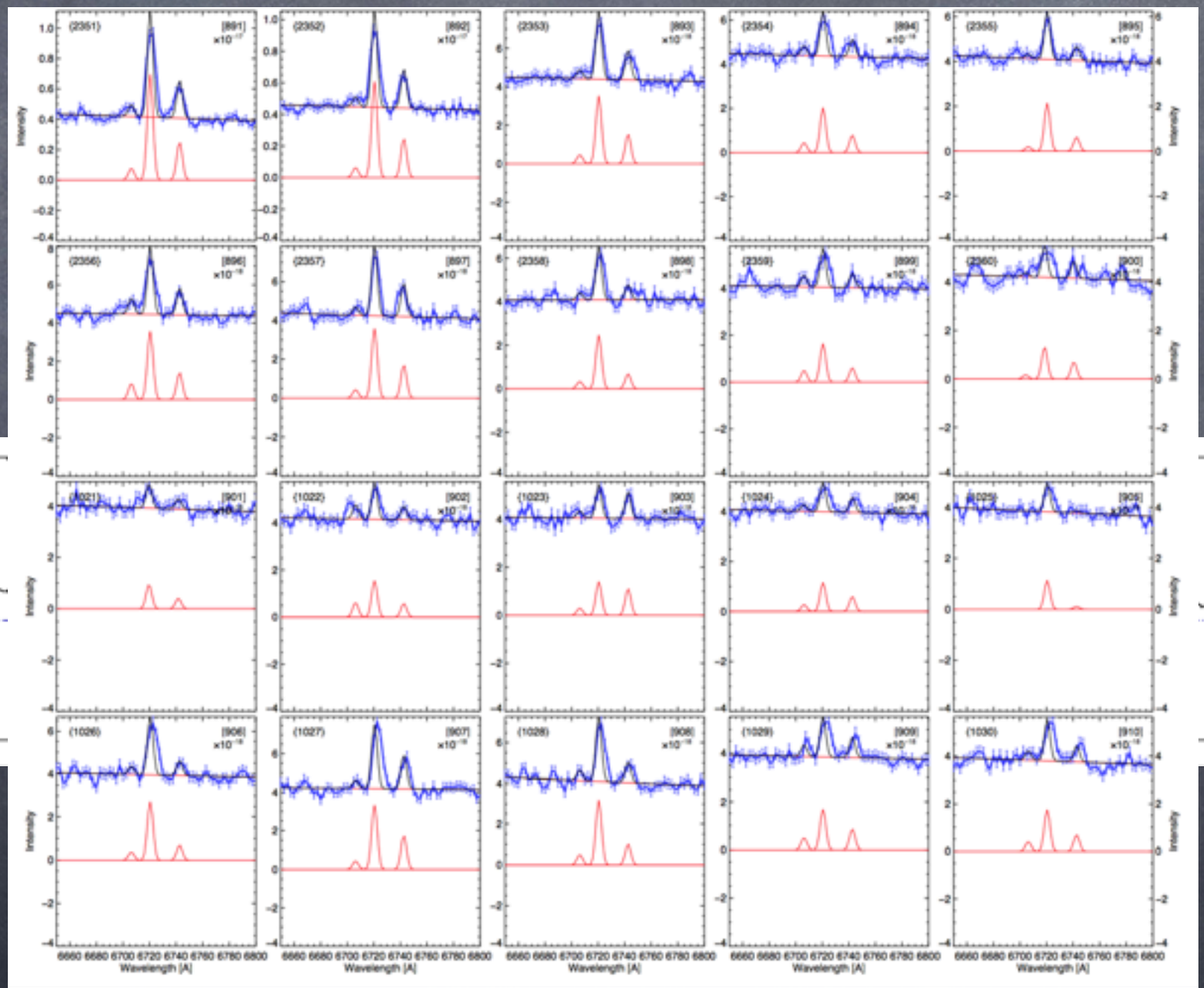

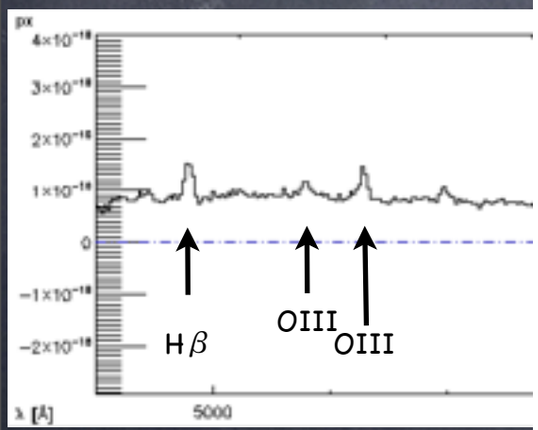

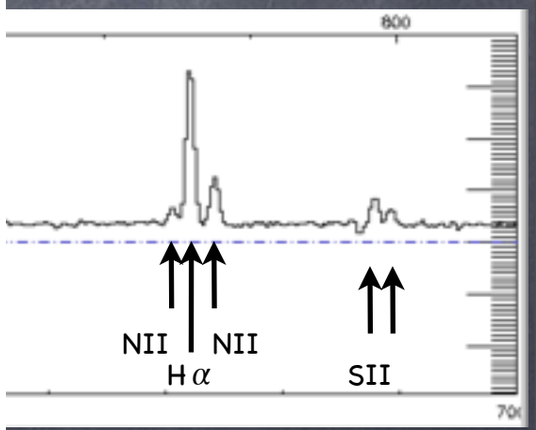

A work in progress

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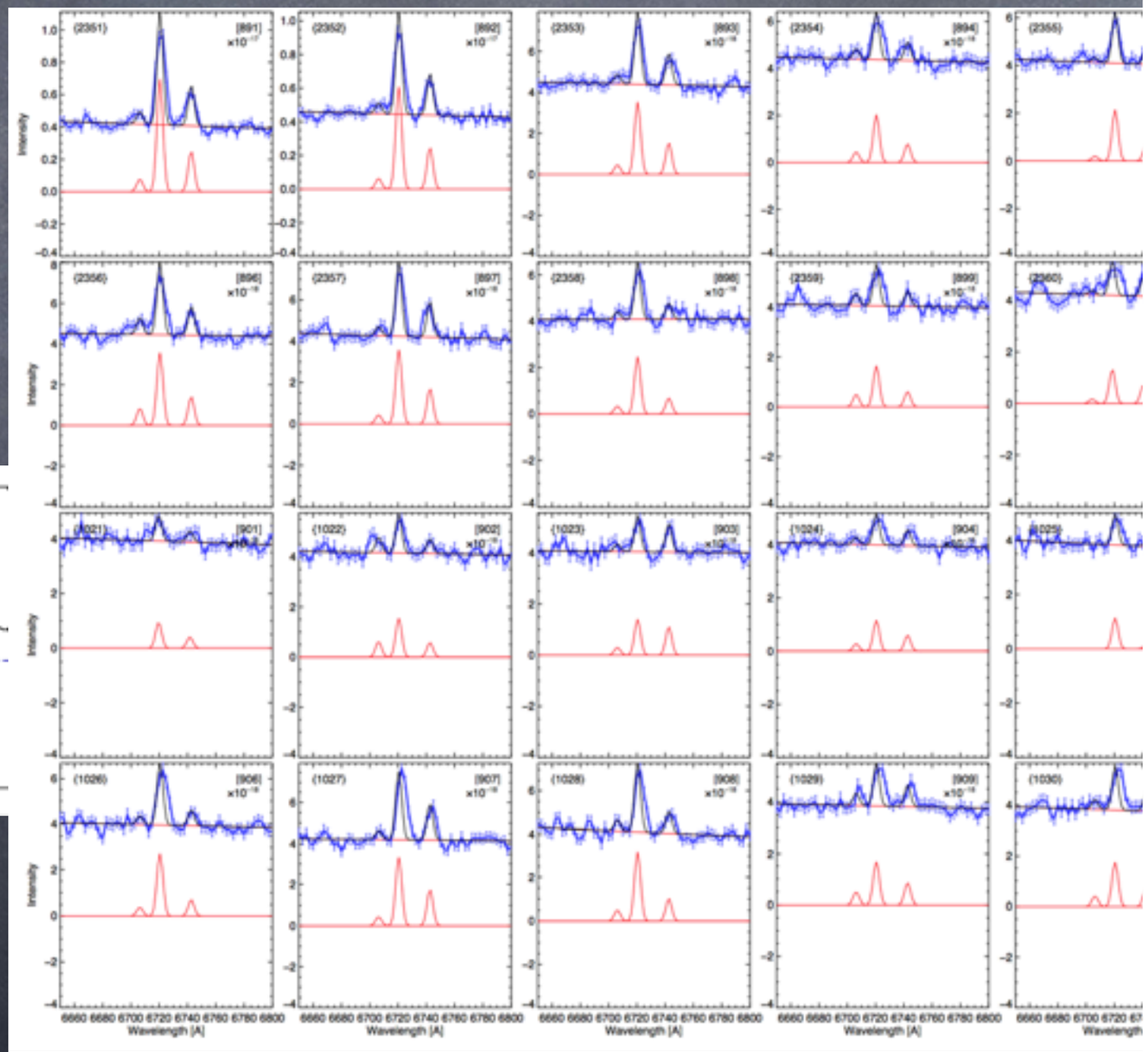

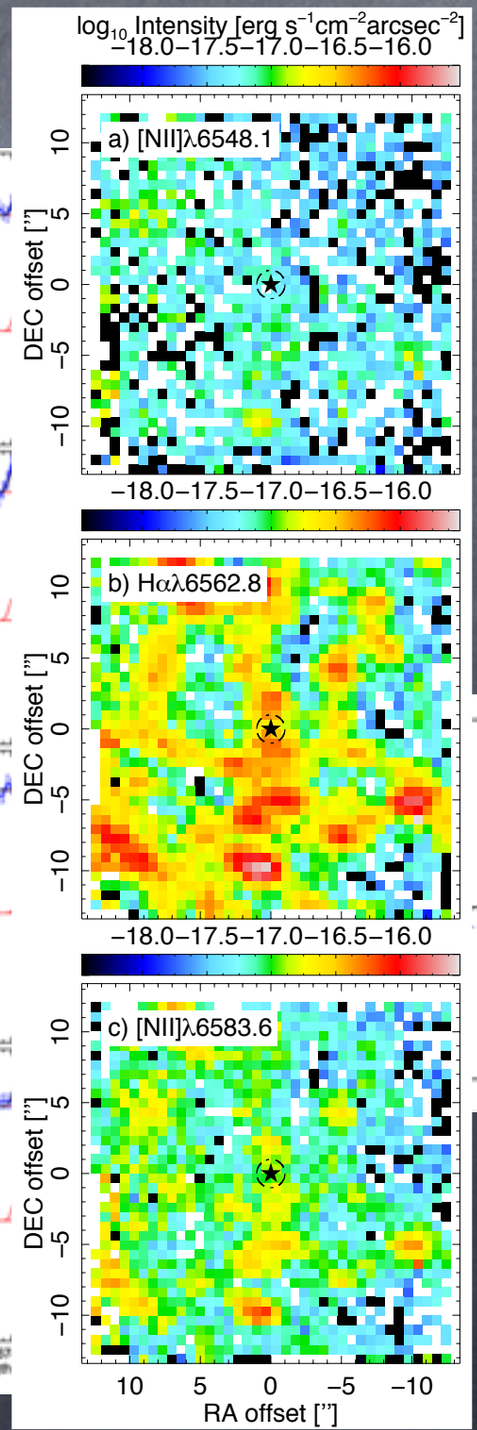

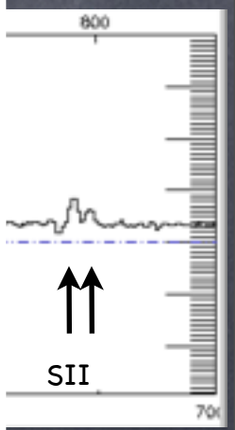

A work in progress

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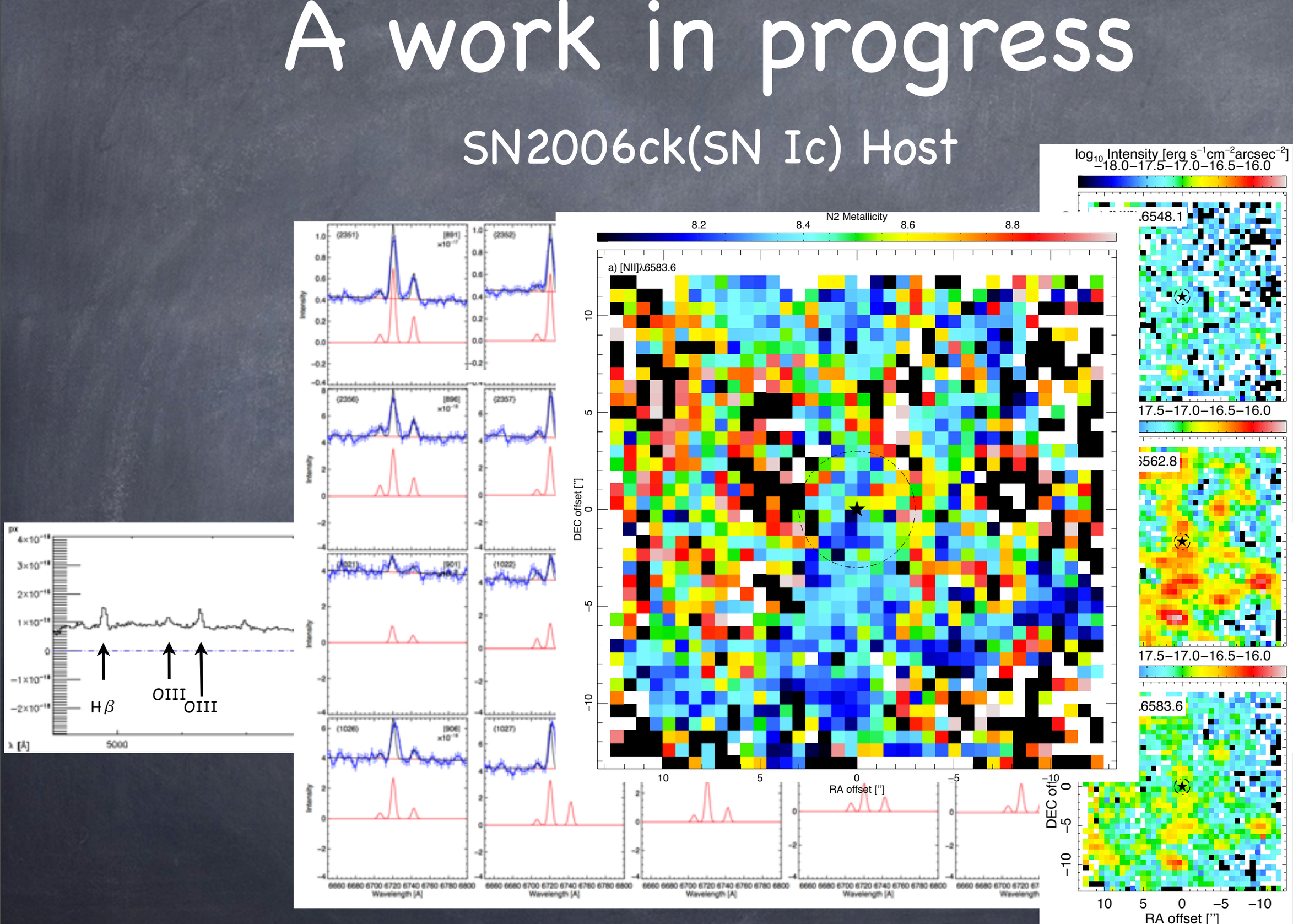

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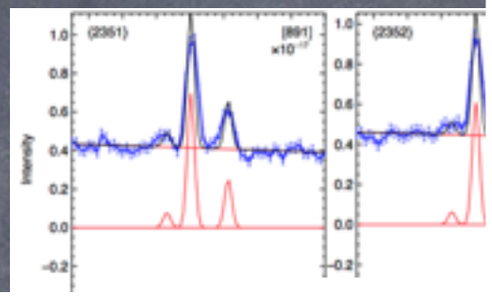

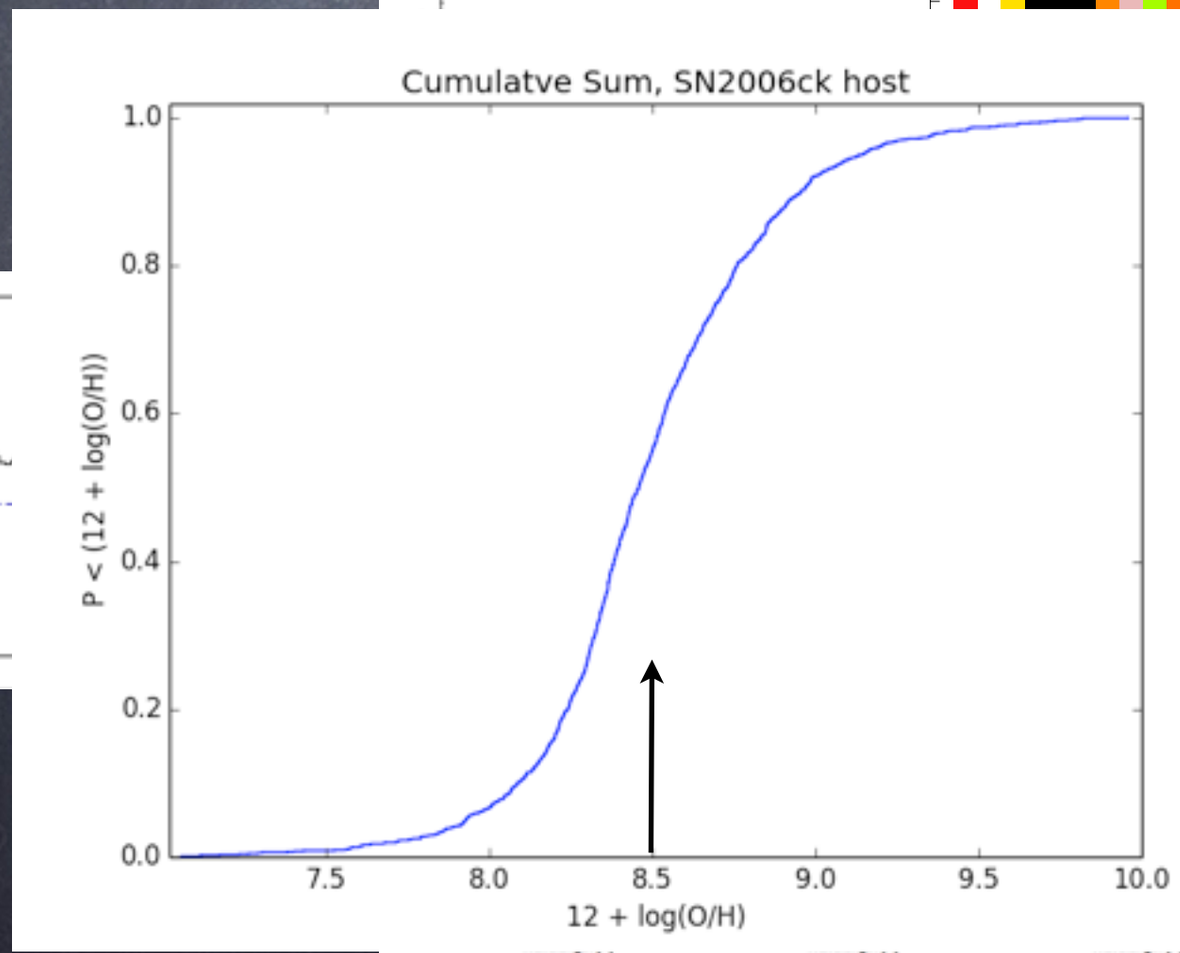

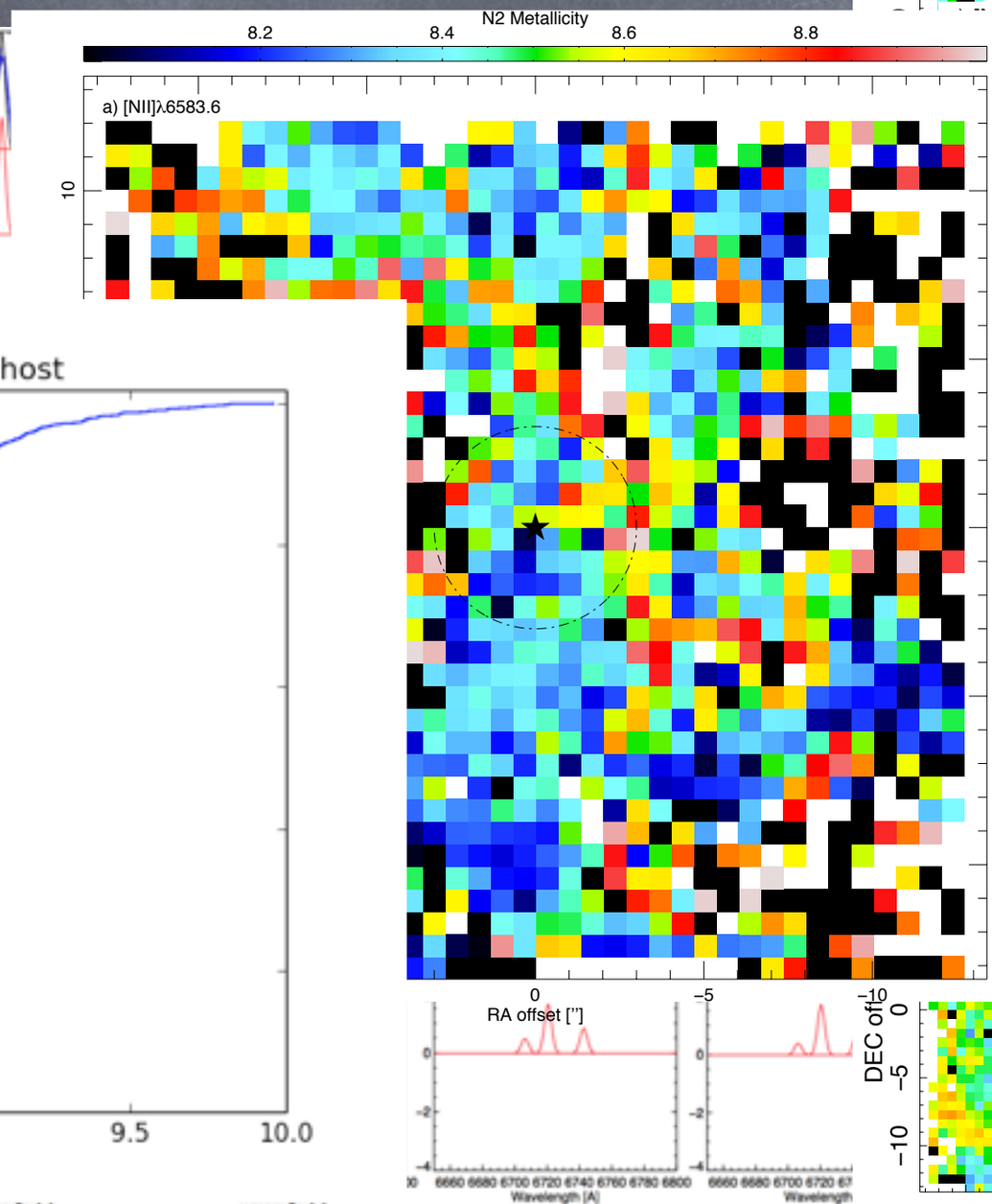

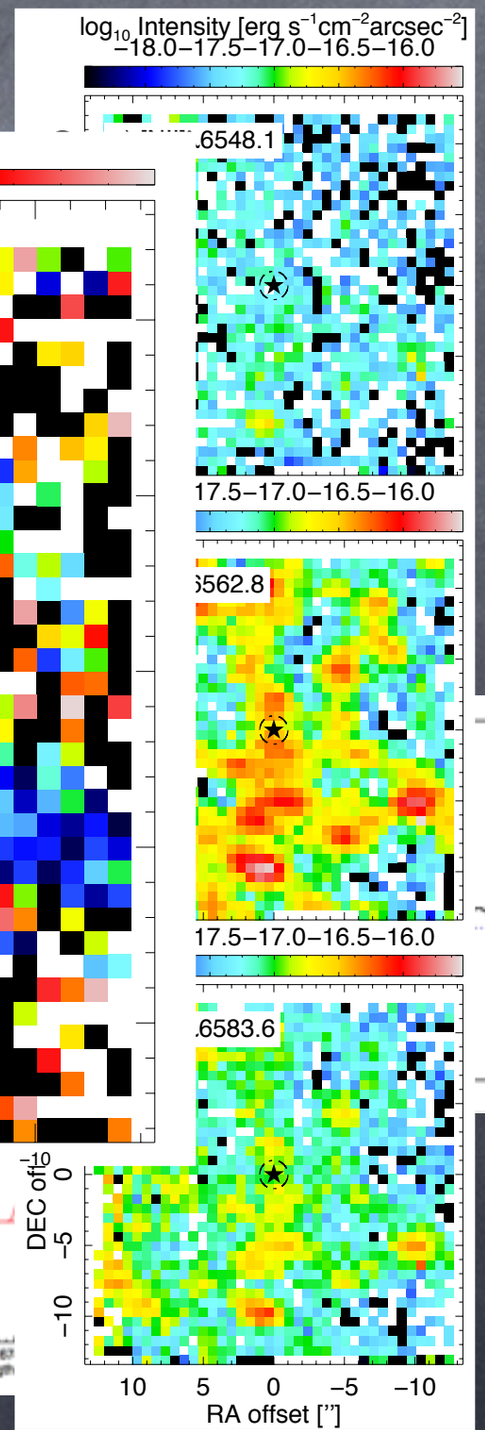

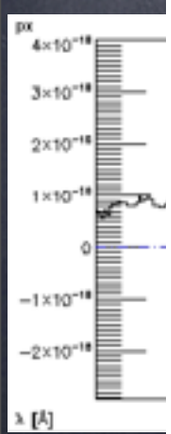

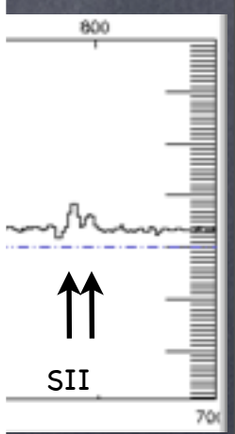

Conclusions

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