Orientation in quasars: EW[OIII] as an inclination indicator

Susanna Bisogni
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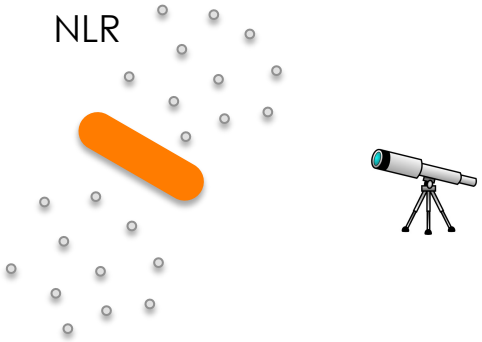
Starting points

Method

Spectral Evidences

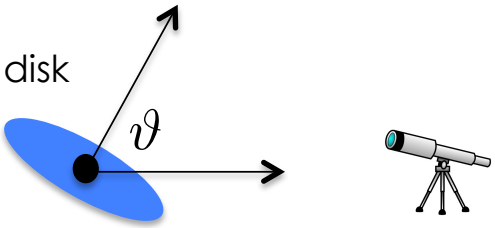
Conclusions

EW[OIII] orientation indicator



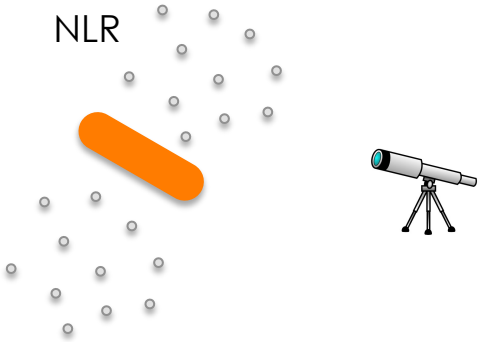
$L_{[OIII]}$: - no contamination from non-AGN processes (*Kauffmann et al. 2003*)

- ISOTROPIC emission (*Mulchaey et al. 1994*) if compared to disk and BLR emissions (*di Serego Alighieri et al. 1997*)



$$L_{d_{oss}} = L_{d_{int}} \cos\vartheta$$

EW[OIII] orientation indicator



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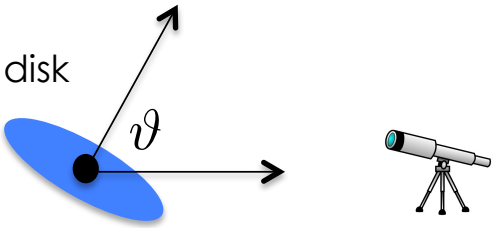
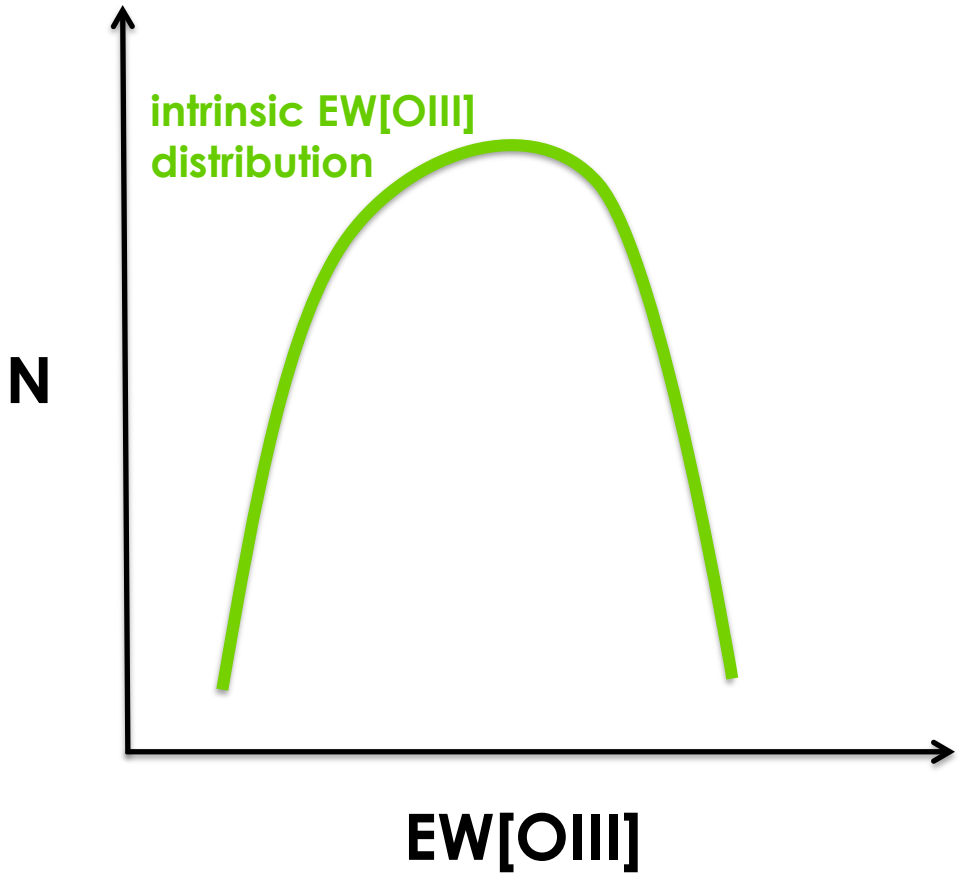


$$L_{d_{oss}} = L_{d_{int}} \cos\vartheta$$

$$EW_{[OIII]} \propto f(\vartheta)$$

EW[OIII] quasars distribution



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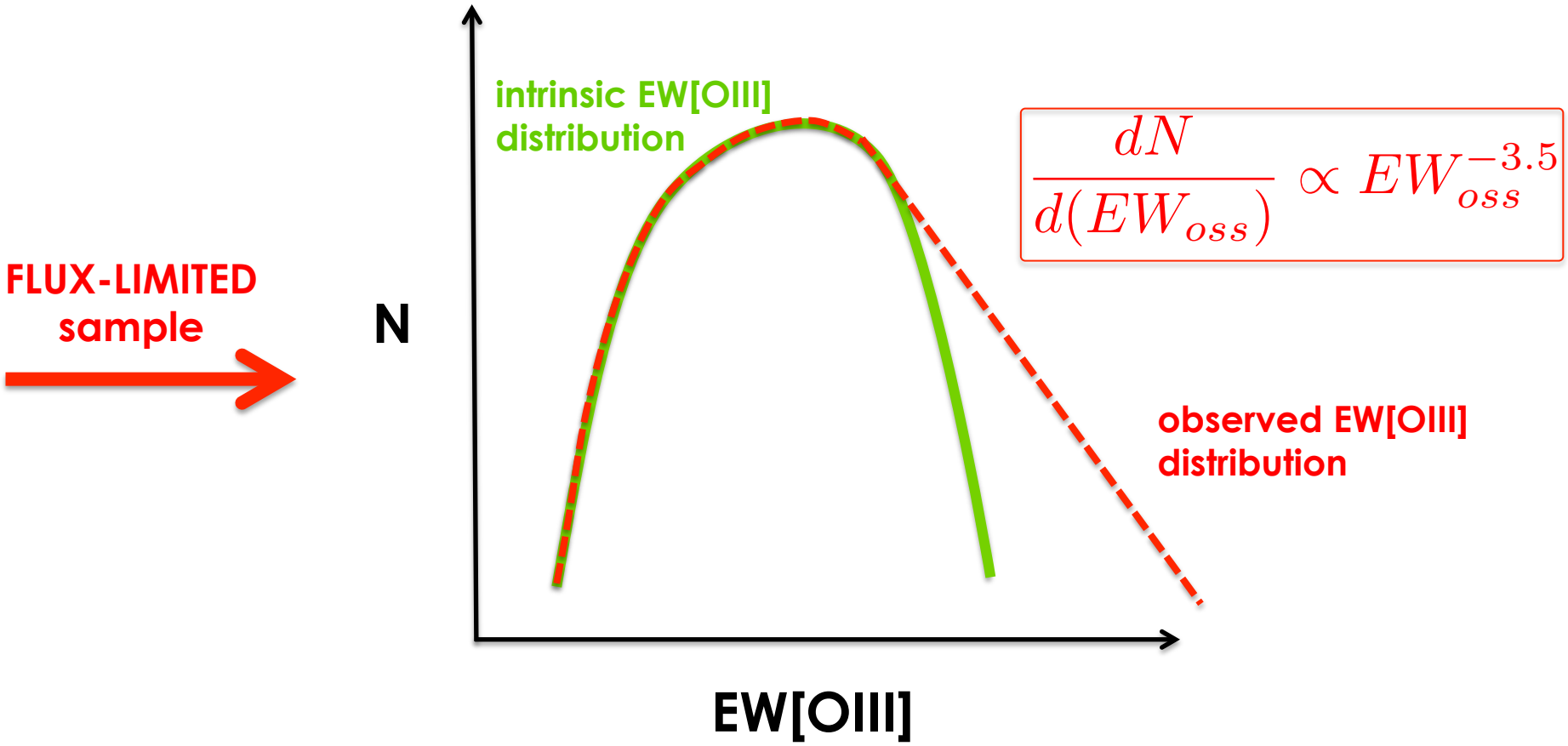
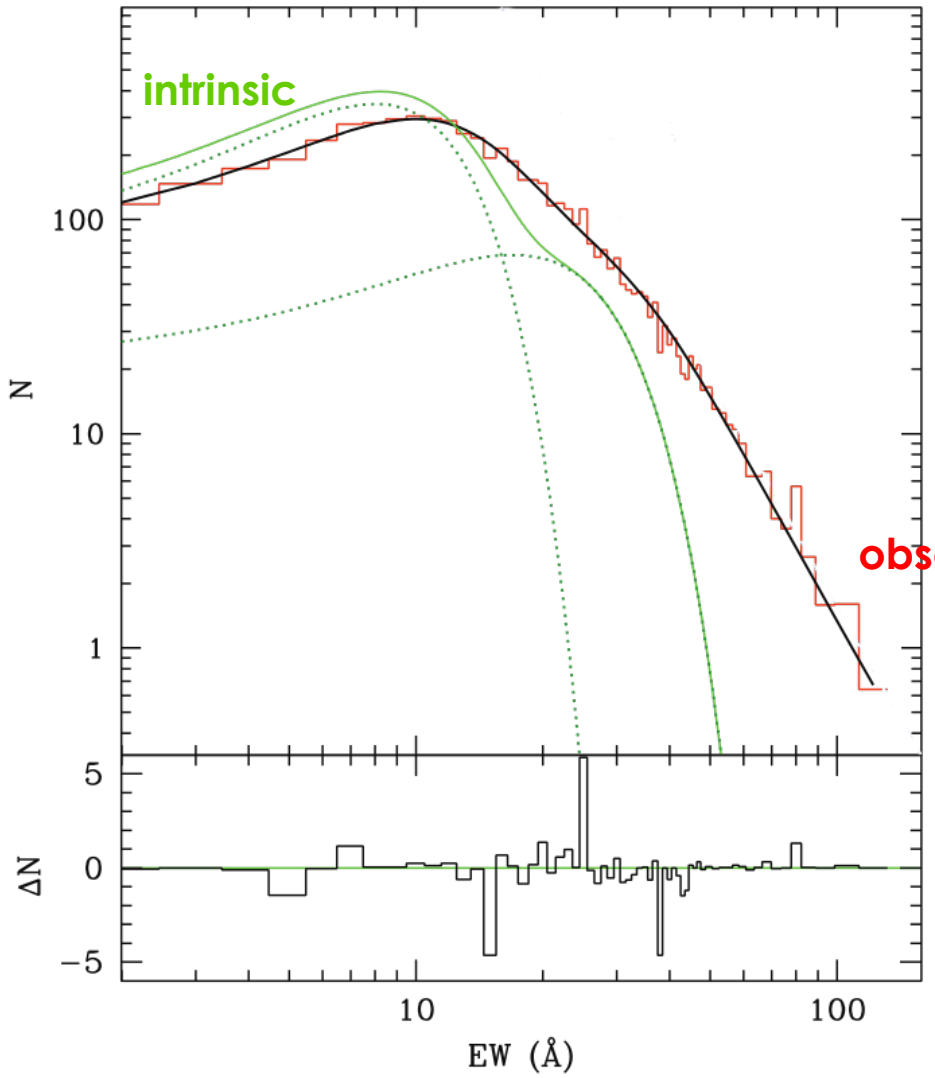


$$\frac{dN}{d(EW_{oss})} \propto EW_{oss}^{-3.5}$$

EW[OIII] quasars distribution

Risaliti et al.(2011)

FLUX-LIMITED sample



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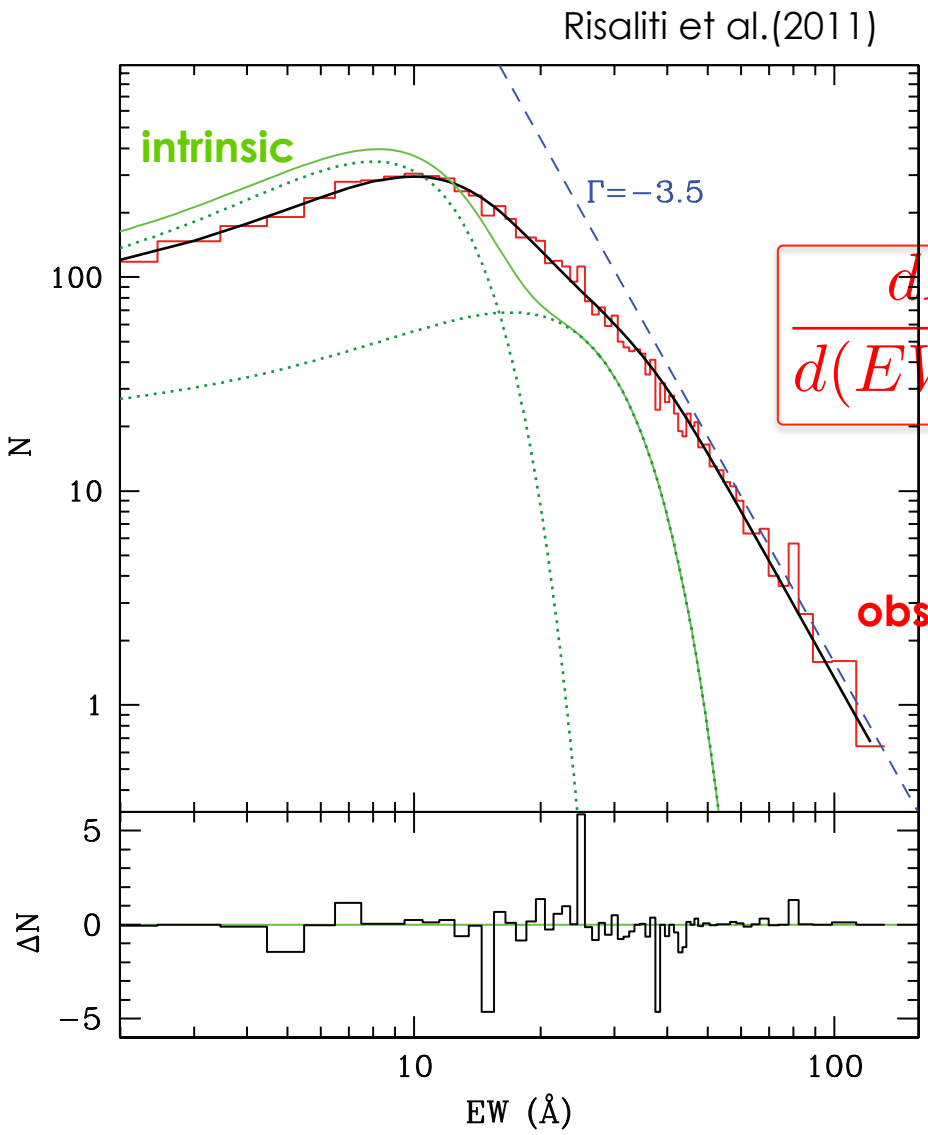

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EW[OIII] quasars distribution

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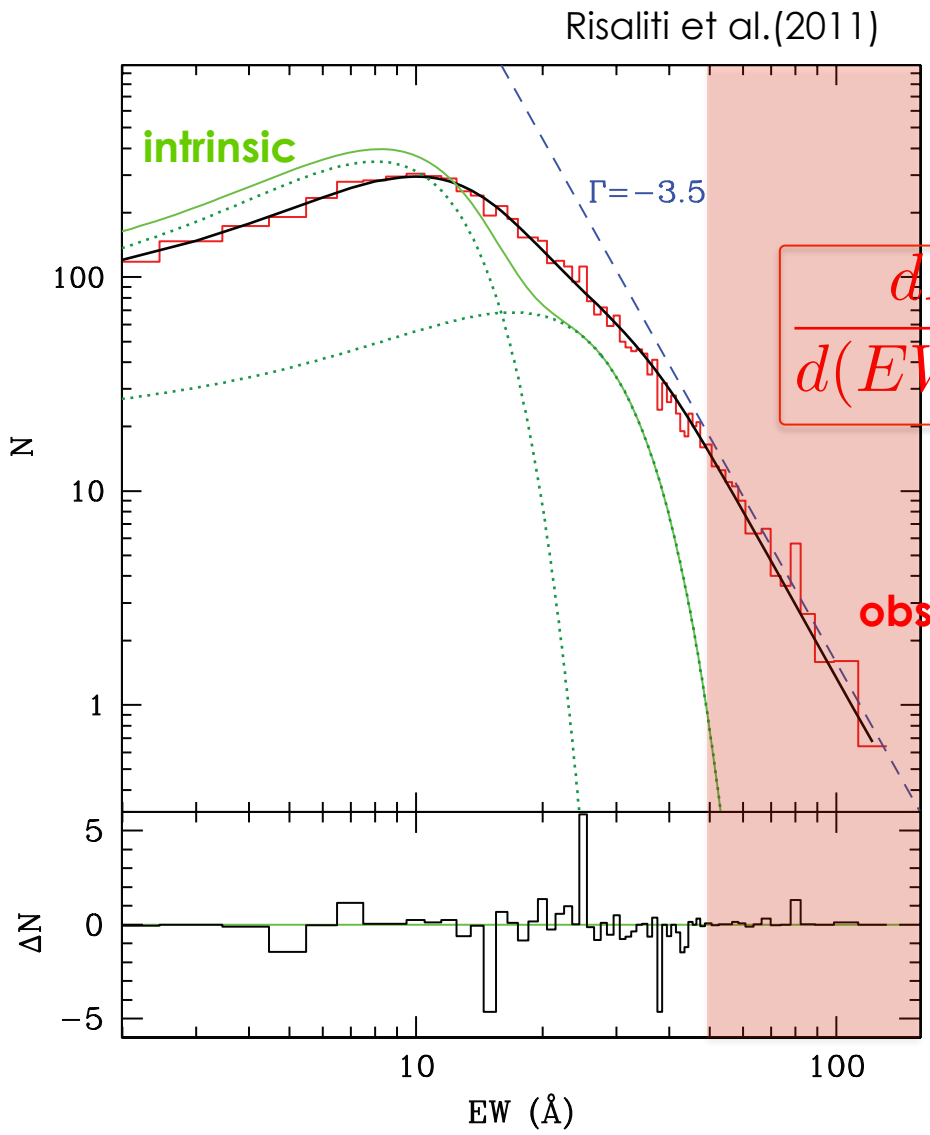
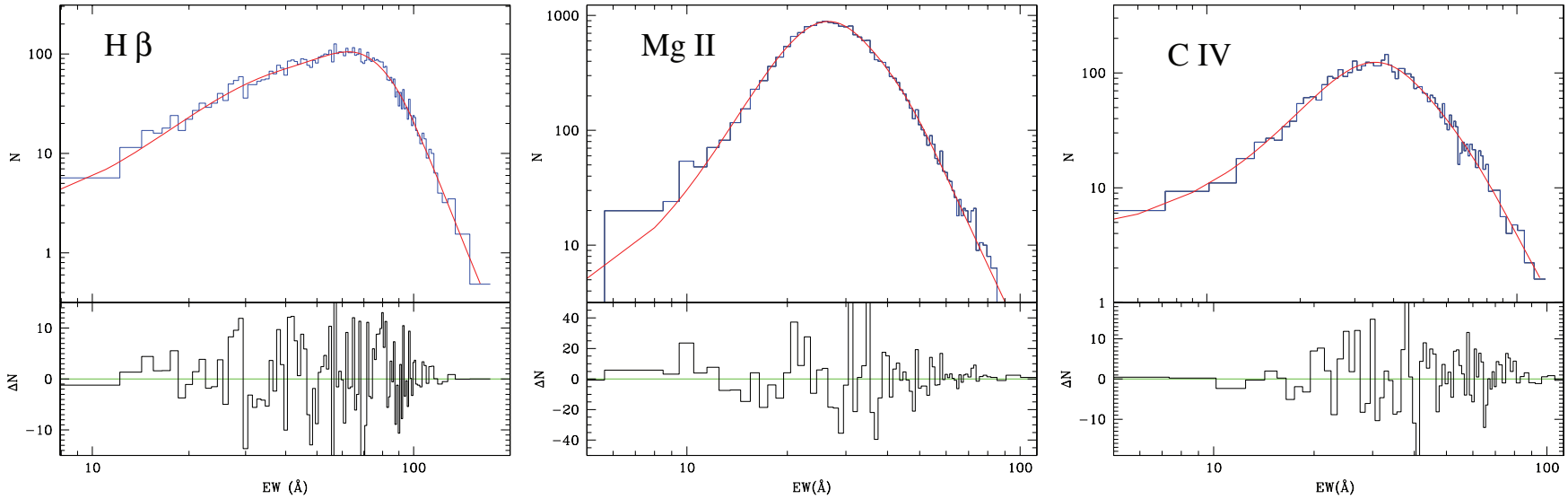


$$\frac{dN}{d(EW_{oss})} \propto EW_{oss}^{-3.5}$$

Slope is <u>not</u> a free parameter!

EW[OIII] vs Broad Lines EWs

Risaliti et al.(2011)



EW[OIII] vs Broad Lines EWs

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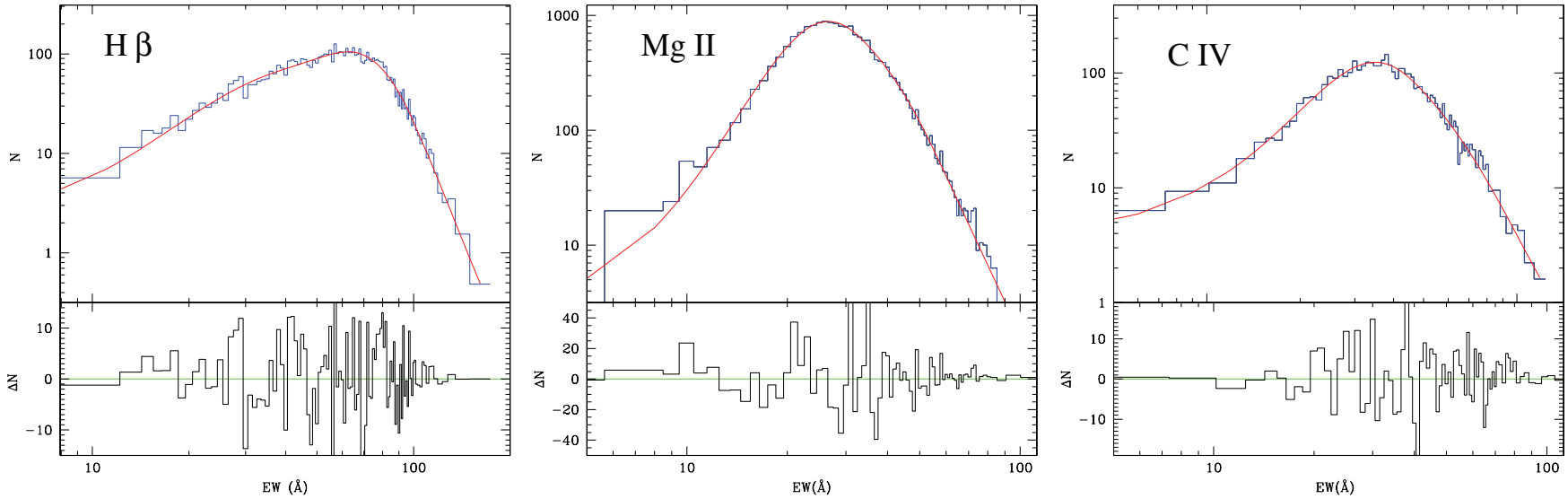
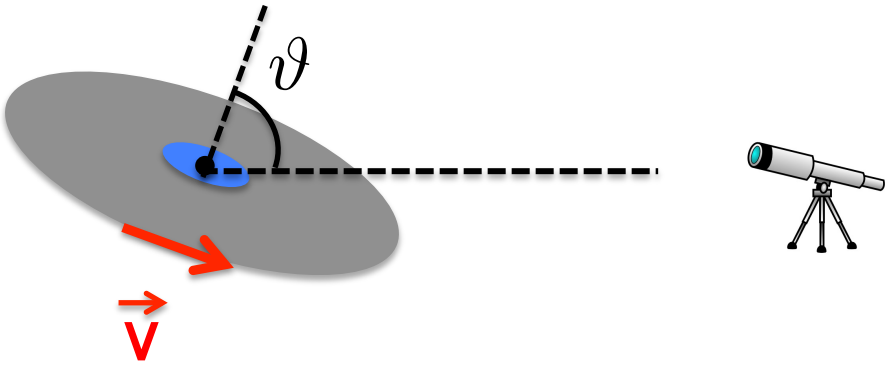
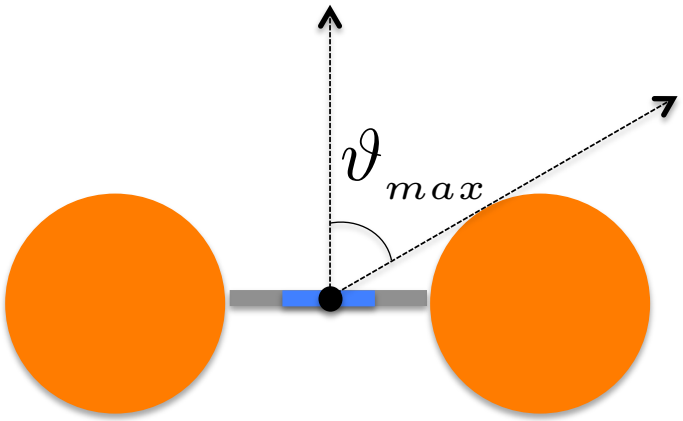
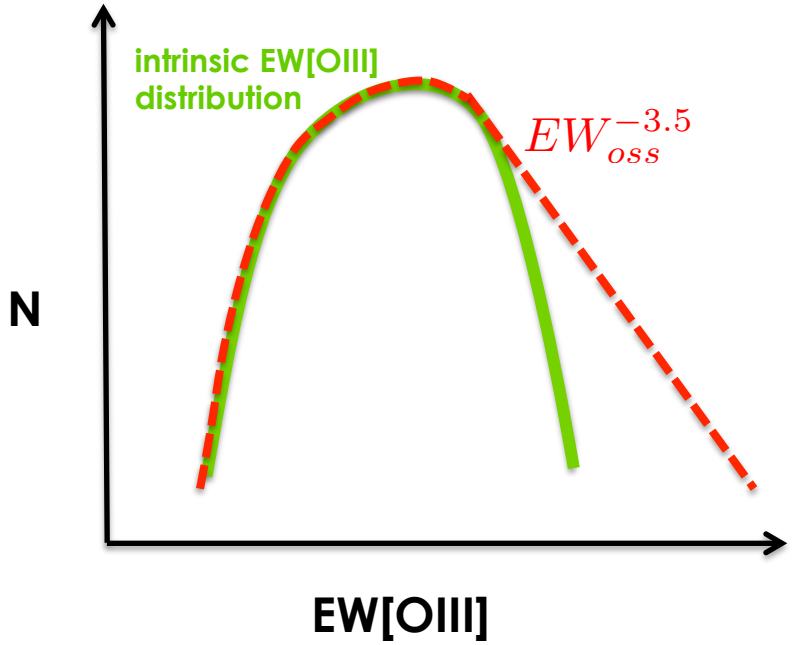




$$L_{BLR_{obs}} = L_{BLR_{int}} \cos\vartheta$$

Missing torus?





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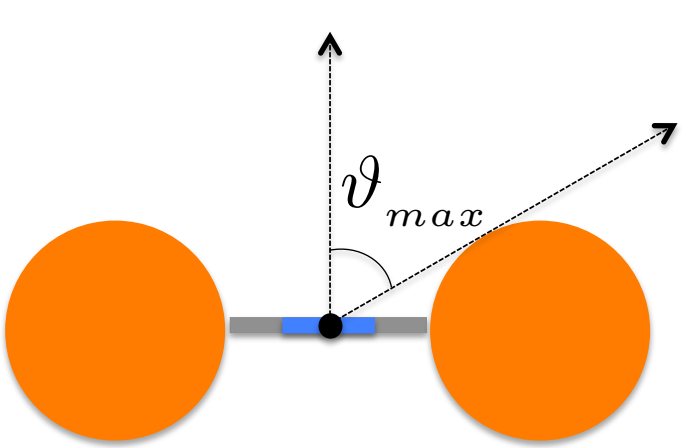

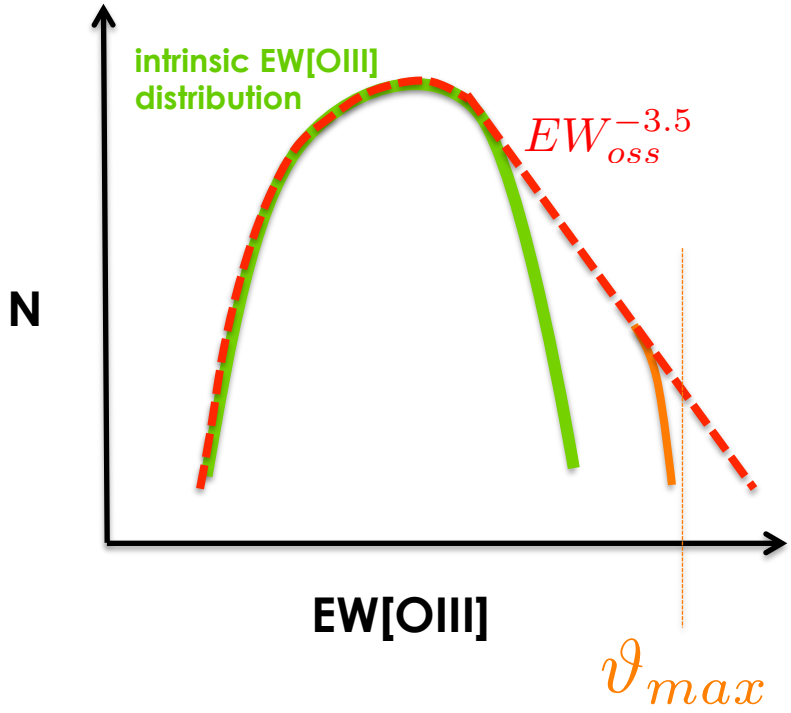

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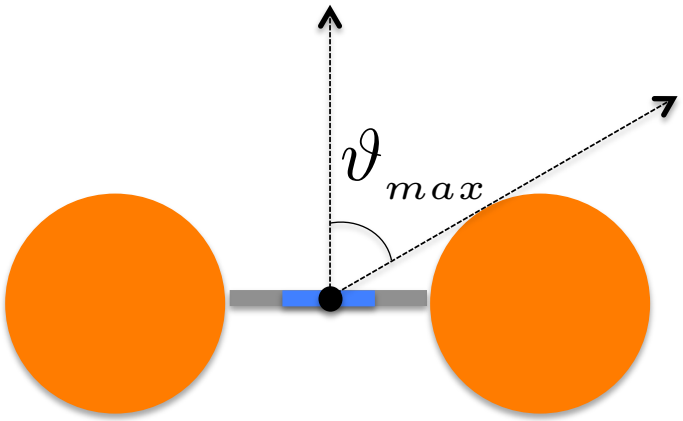

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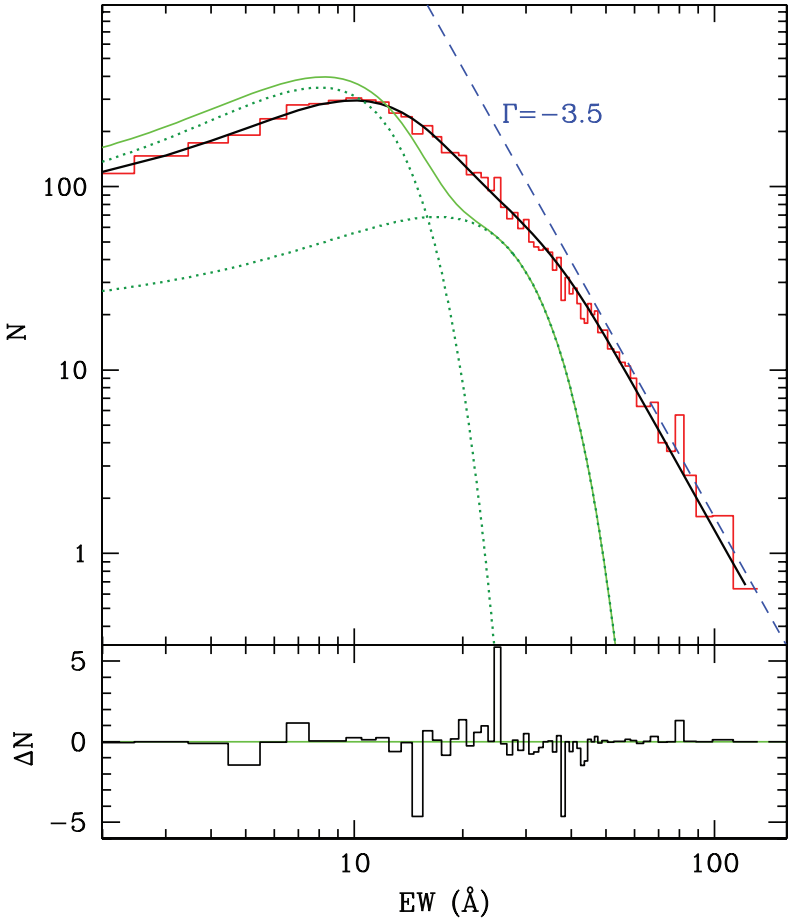

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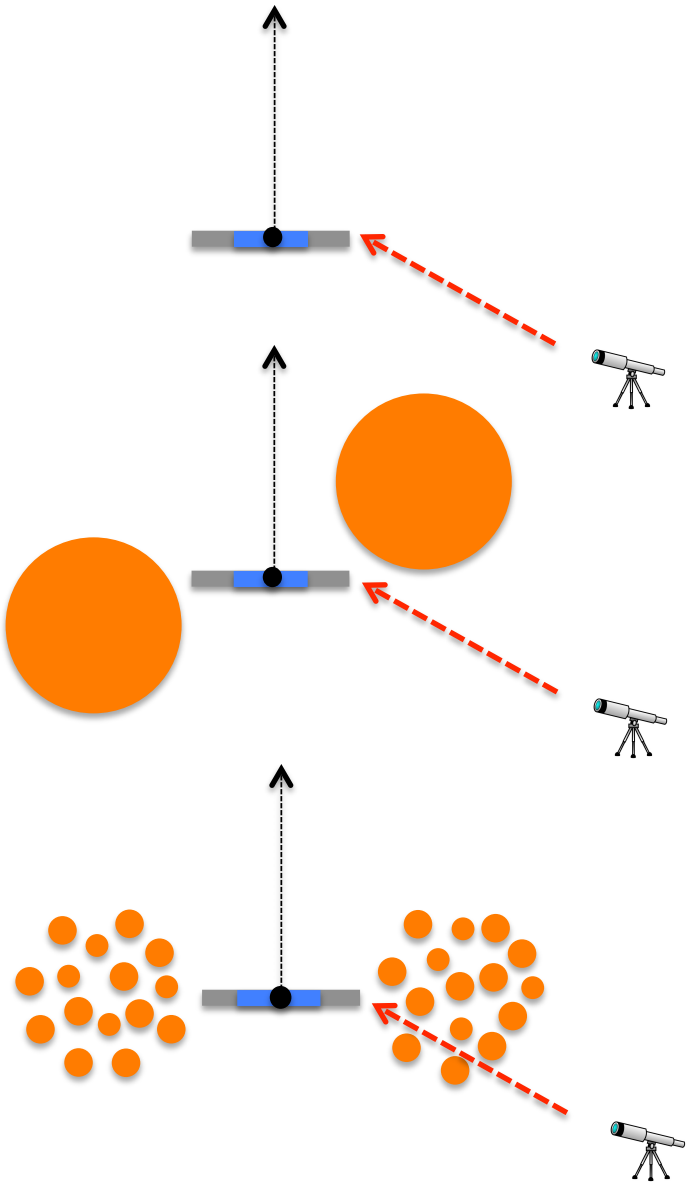

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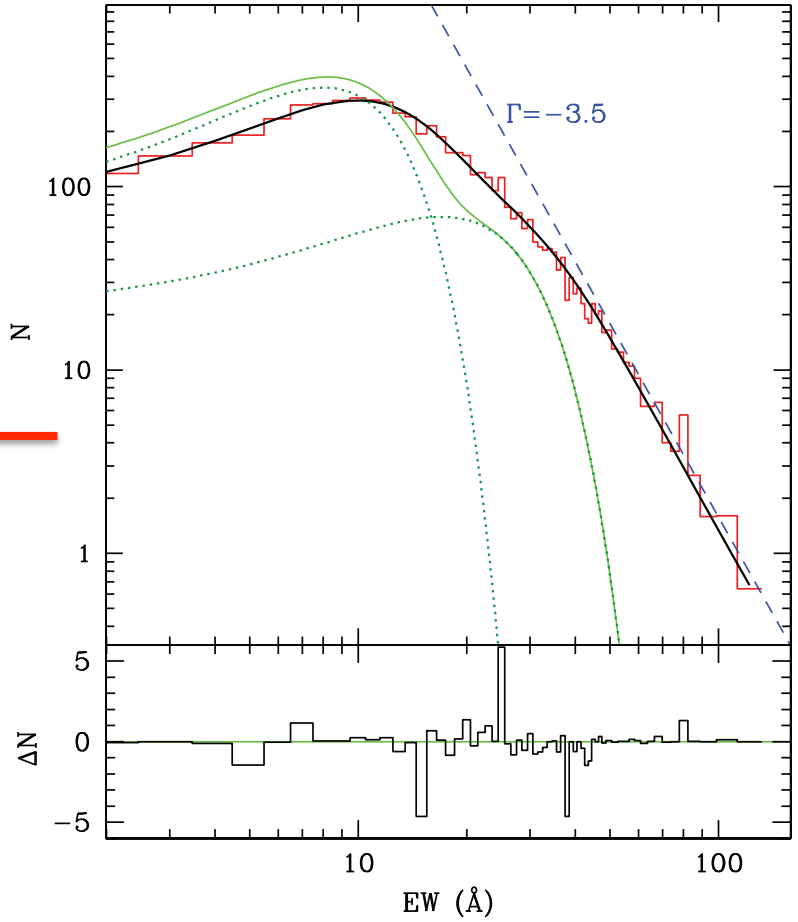

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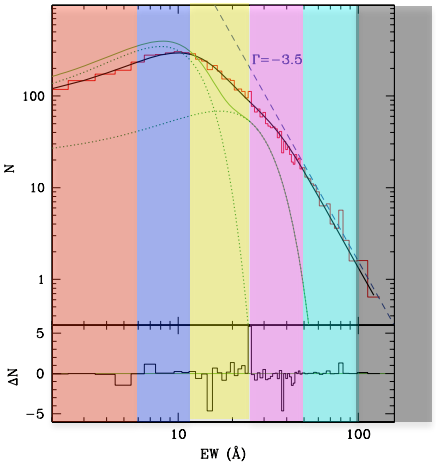
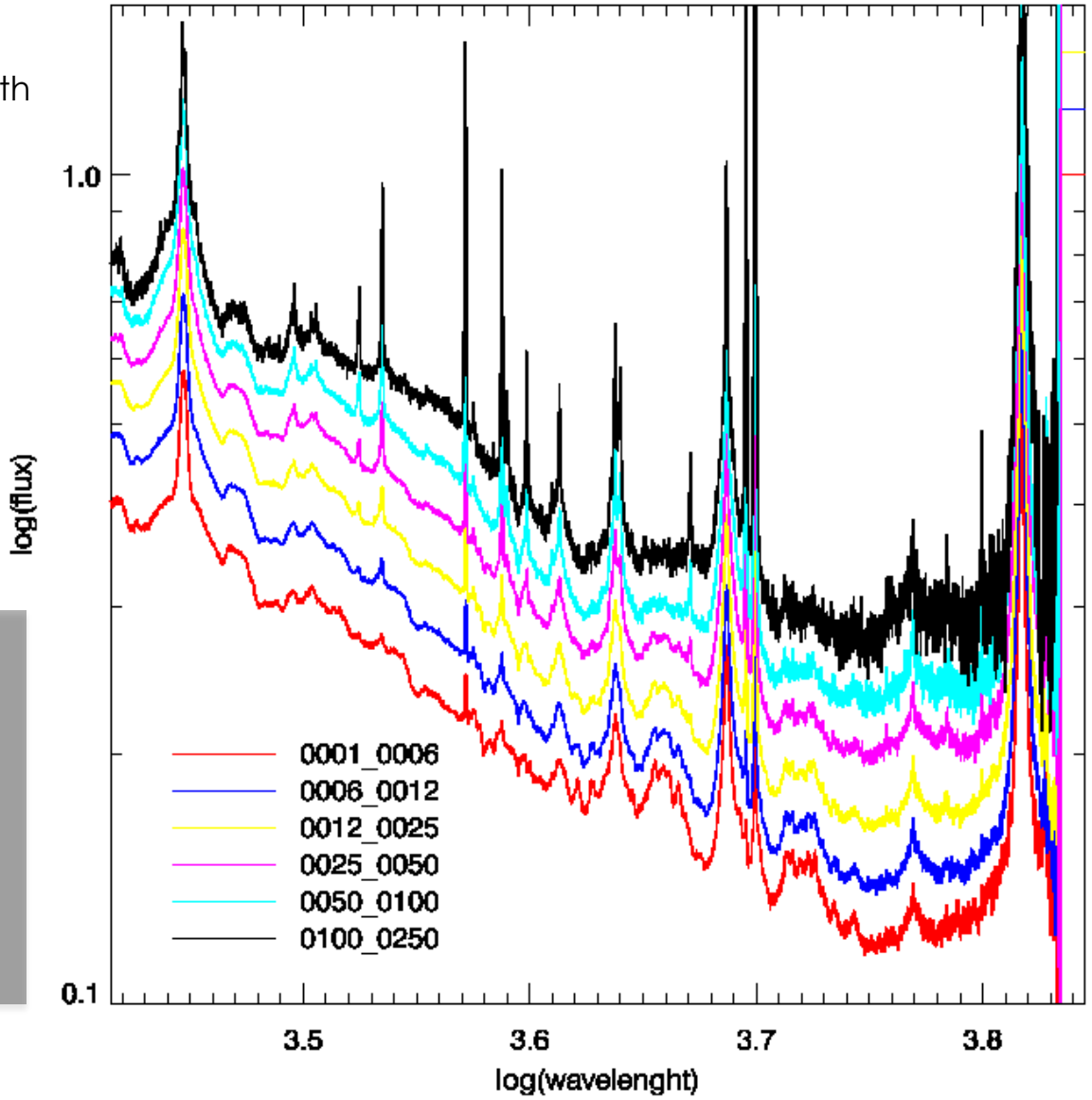
Spectra Stacking

12.000 quasars
from SDSS DR 7th





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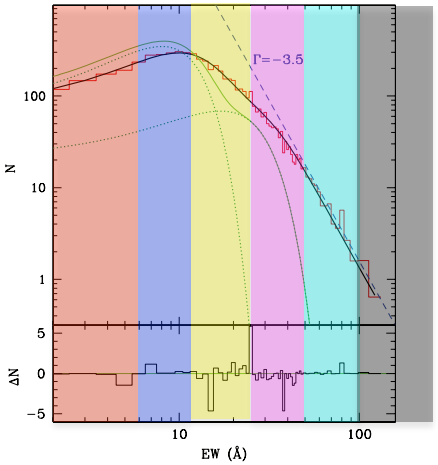

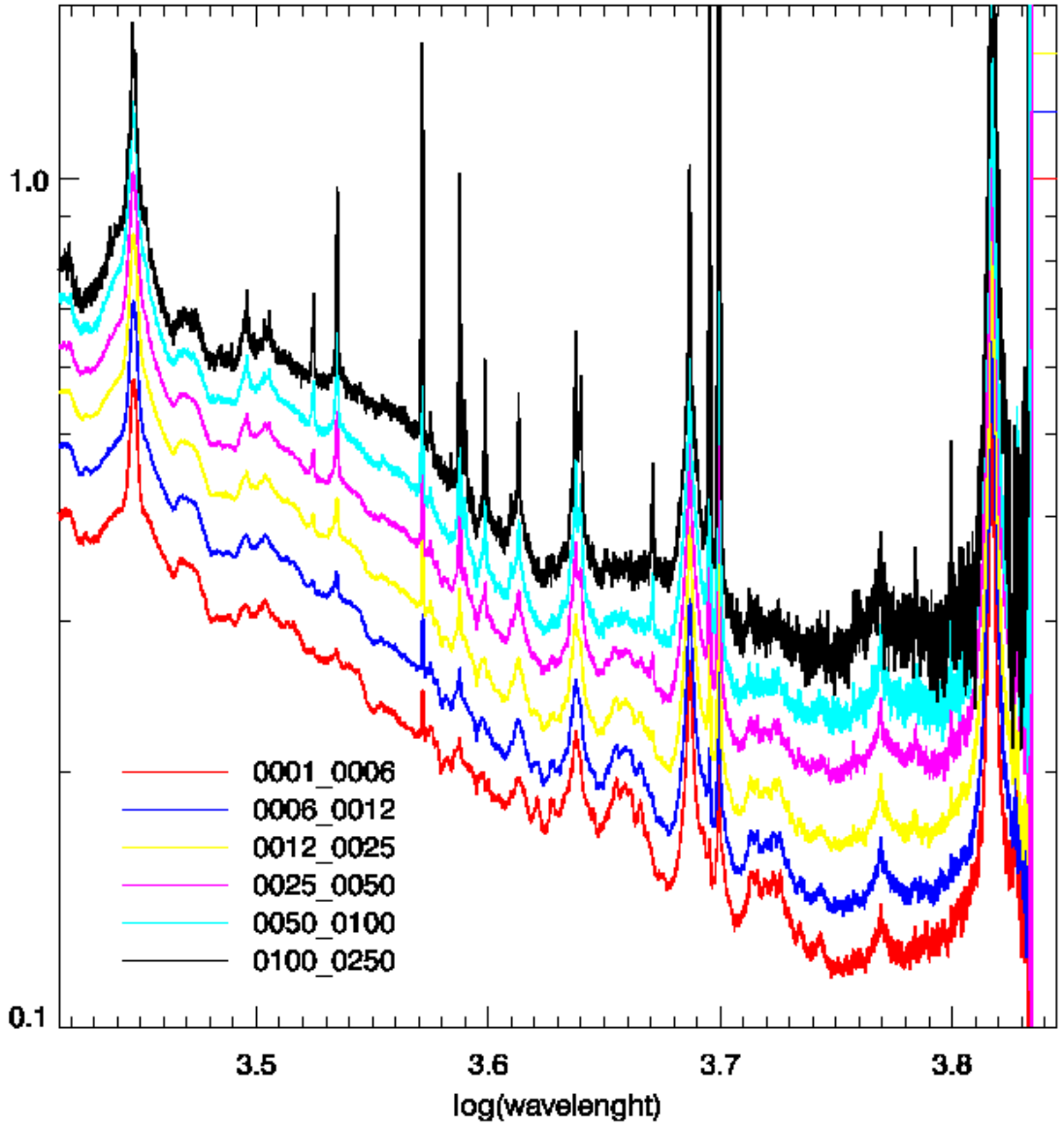

No red spectra!

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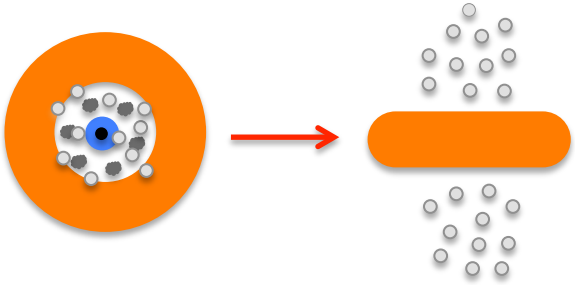
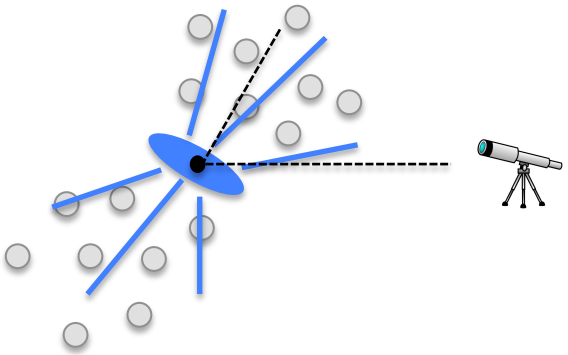
Narrow Lines





$$v_{oss} = v_{out} \cos \vartheta$$

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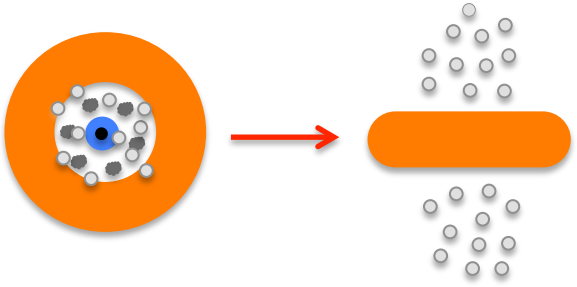

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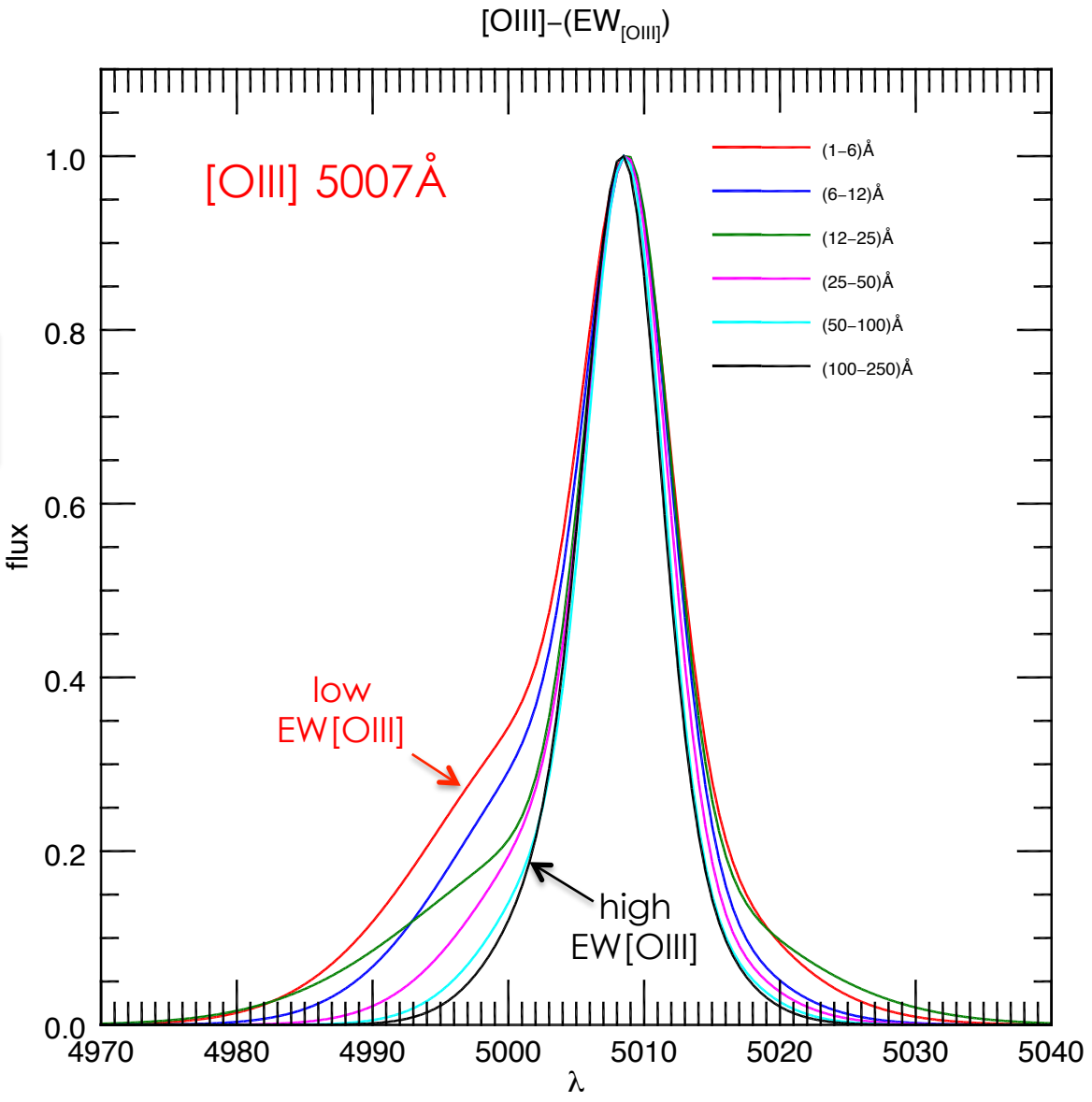

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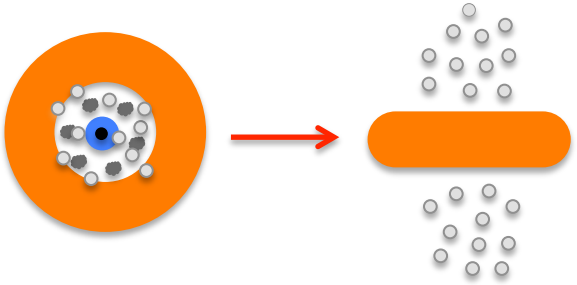

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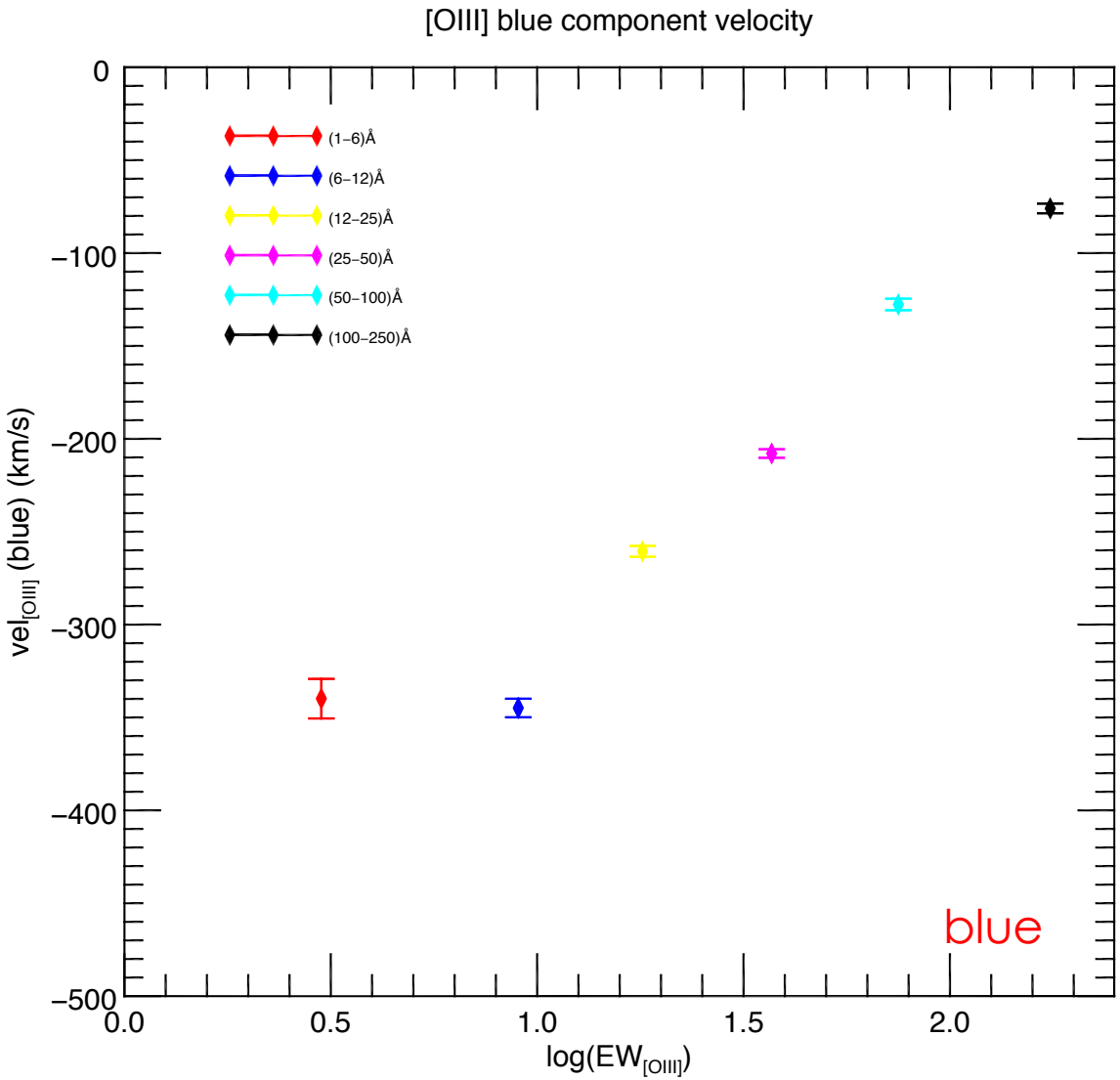
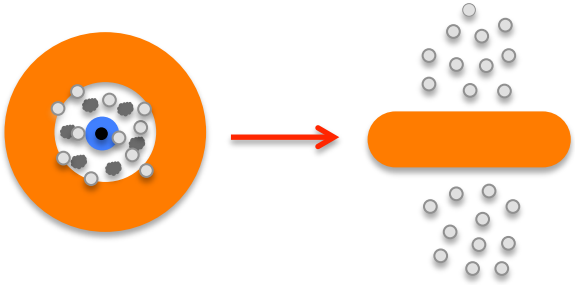
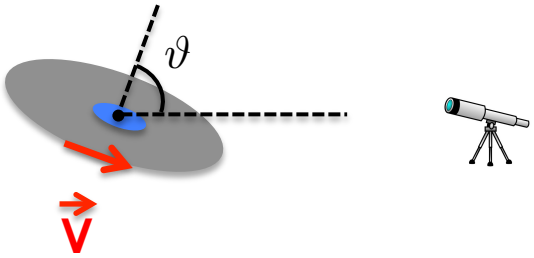


Broad Lines





$$v_{oss} = v_{rot} \sin \vartheta$$

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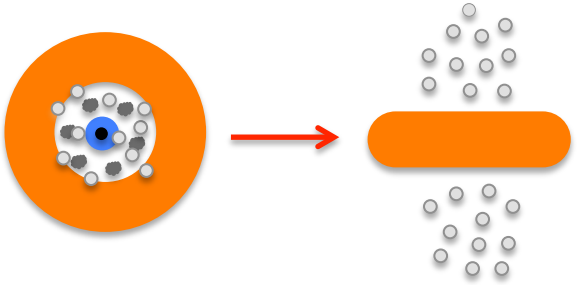

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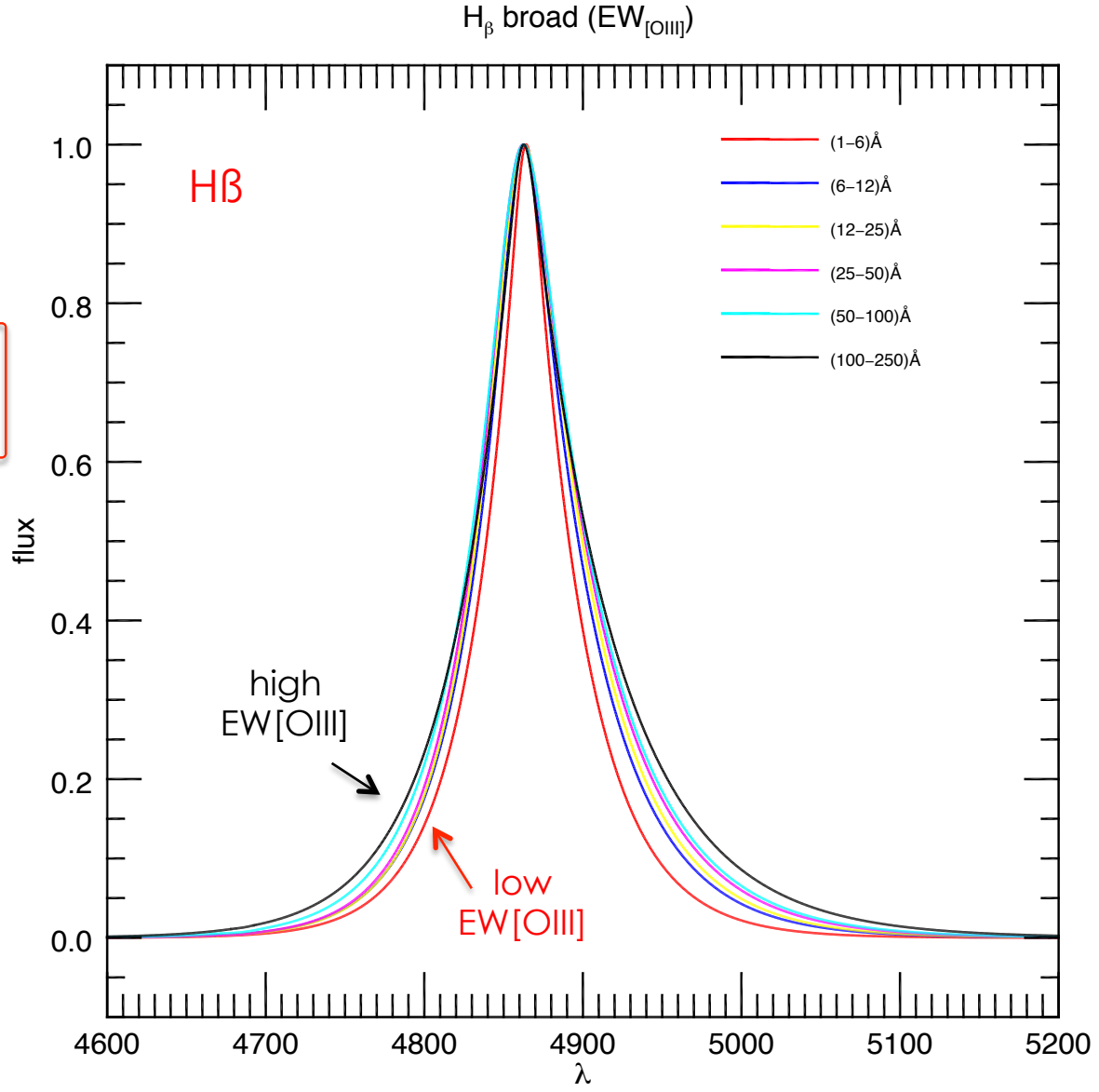

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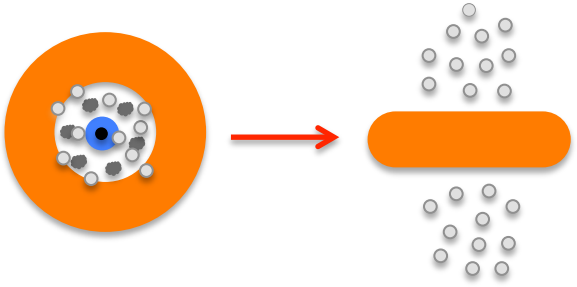

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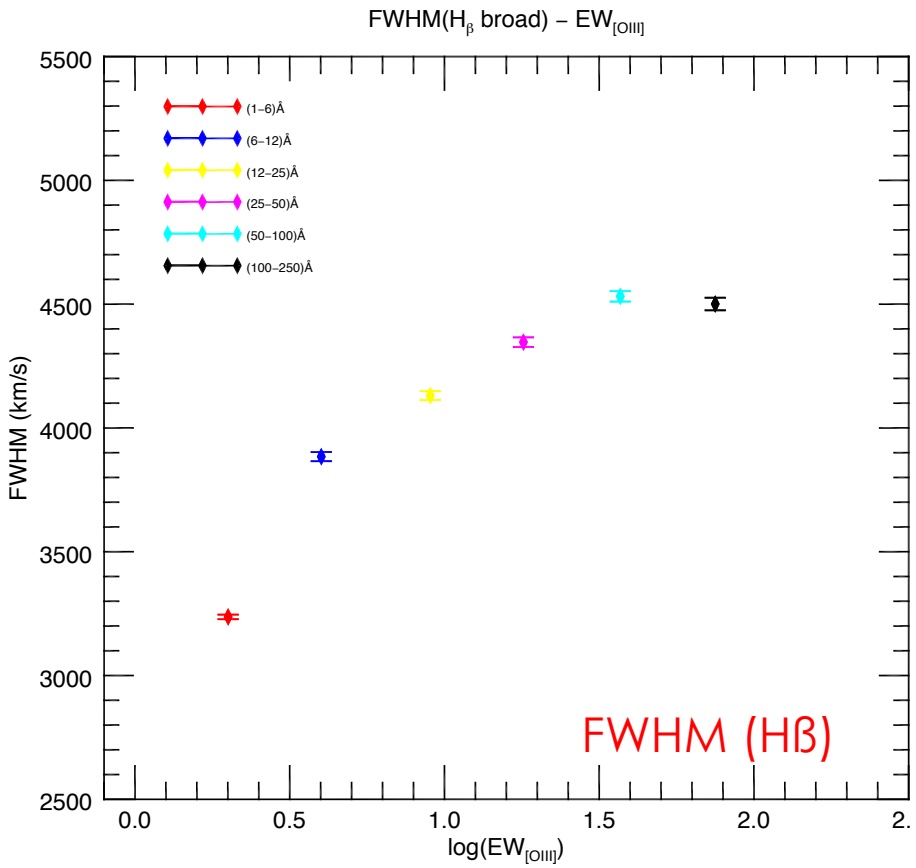

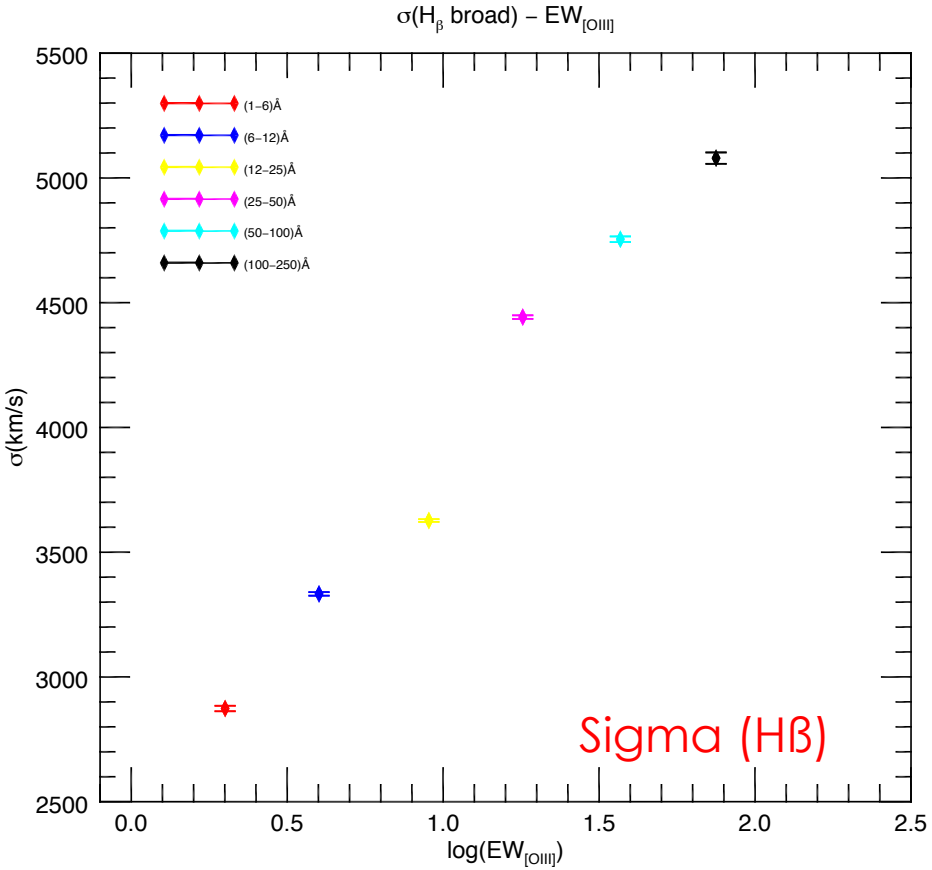

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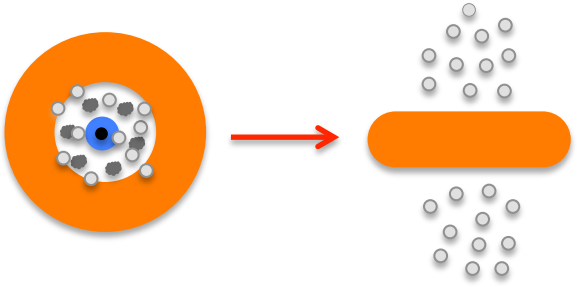

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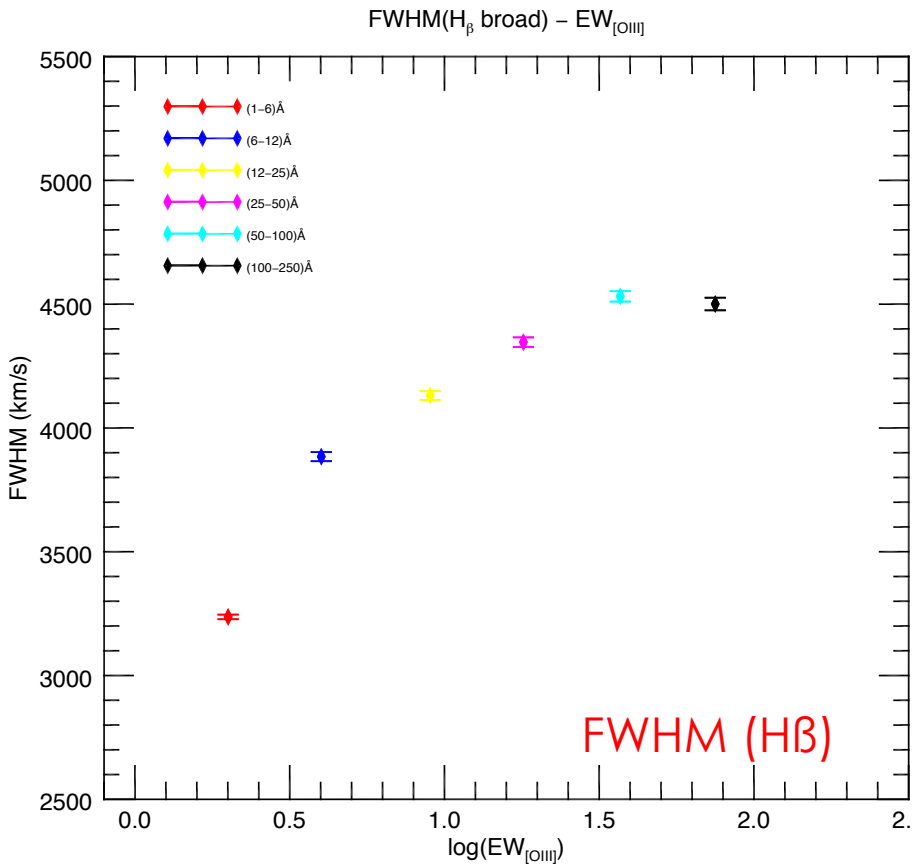
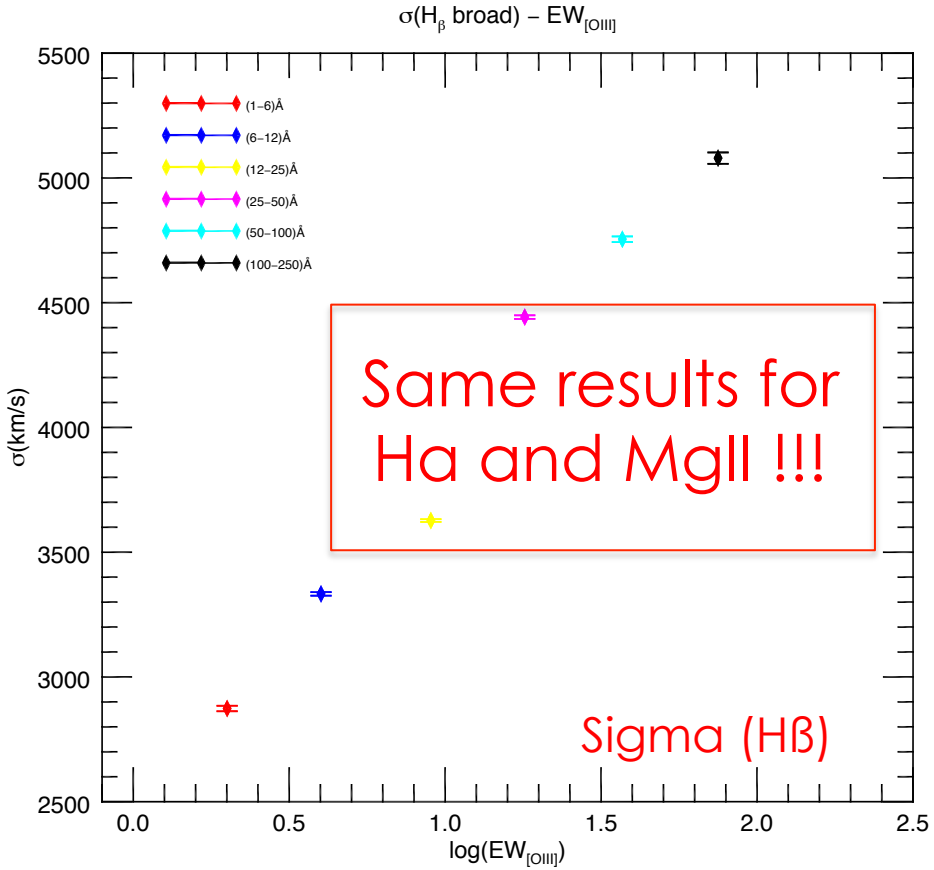
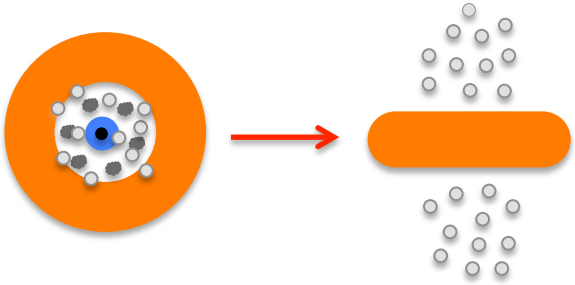
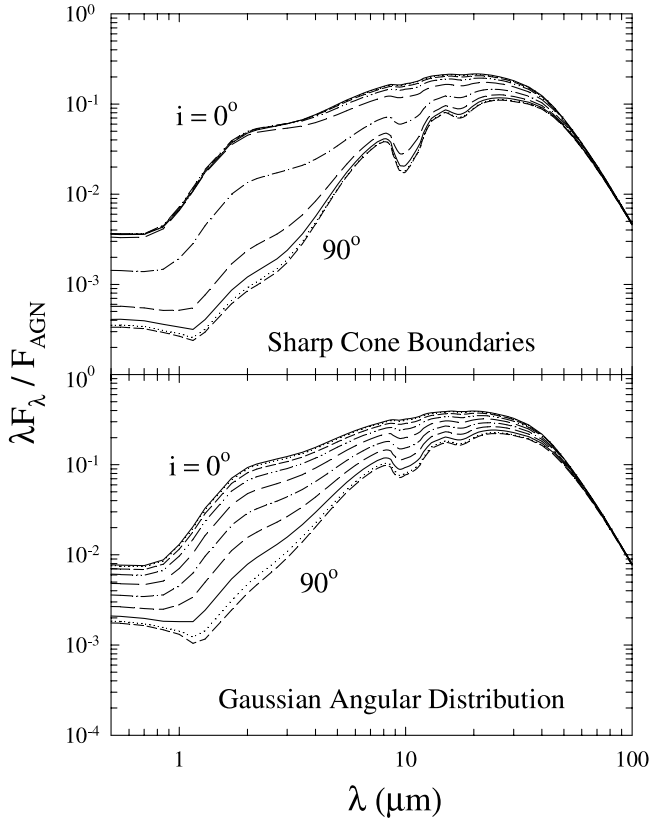


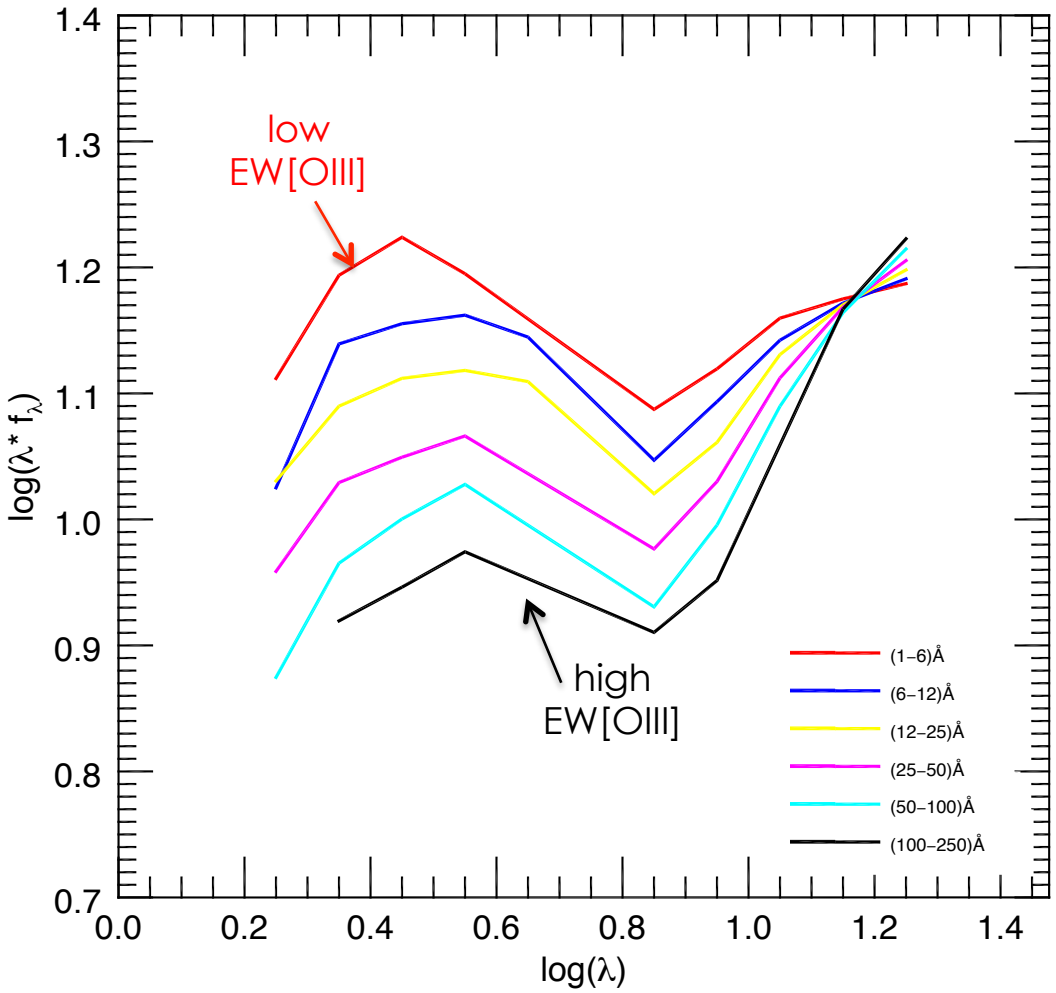


IR (torus) SEDs





Nenkova et al.(2008)



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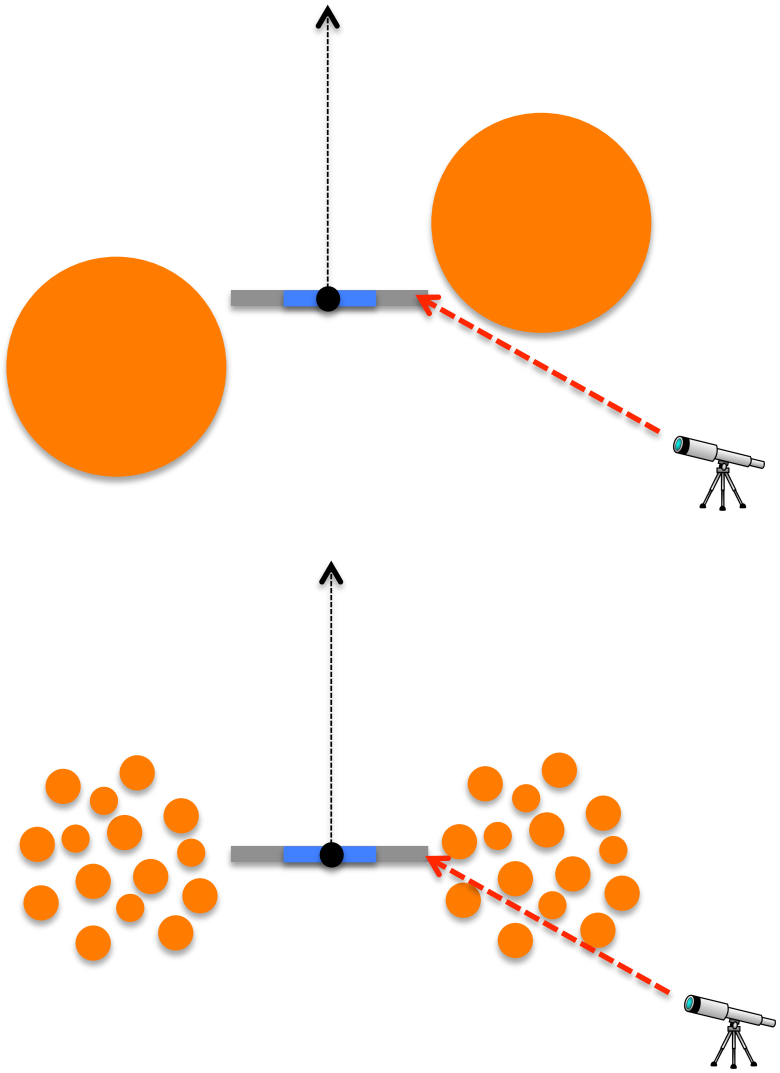
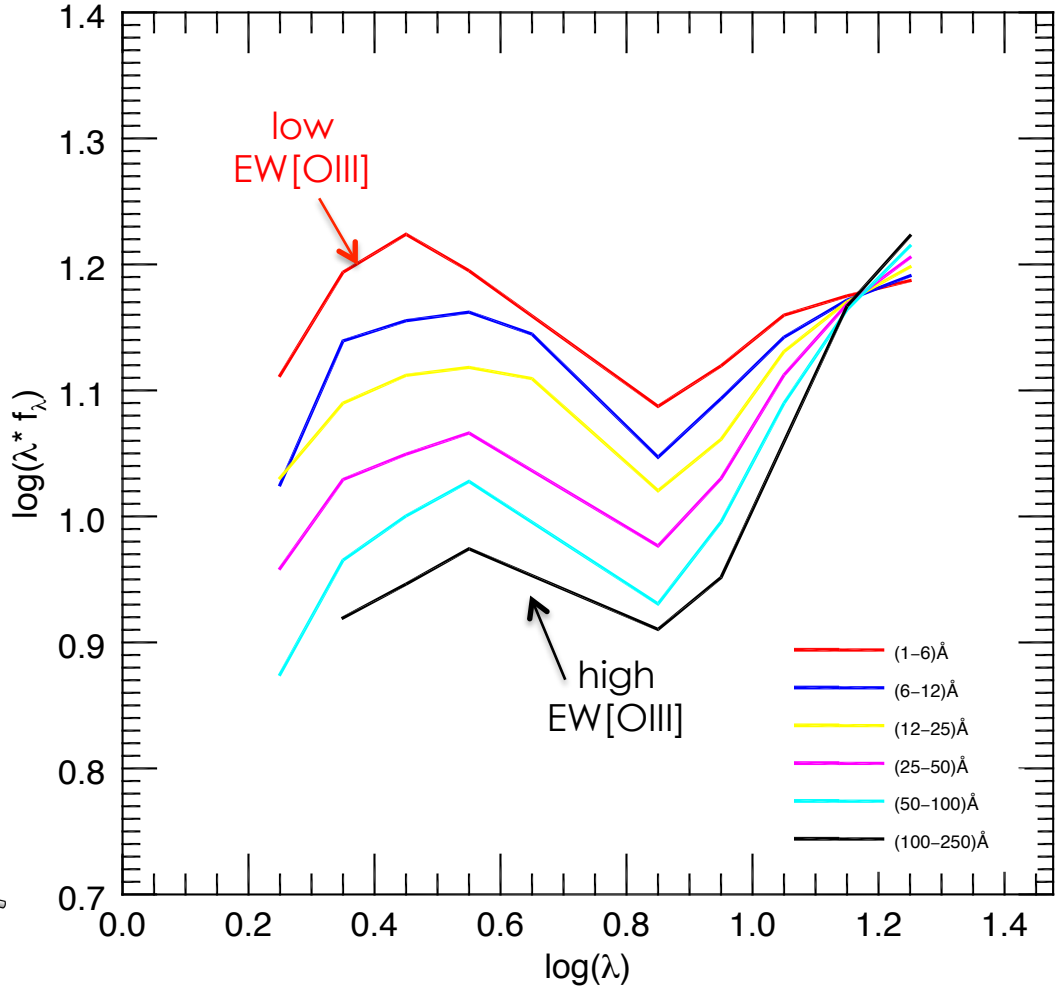
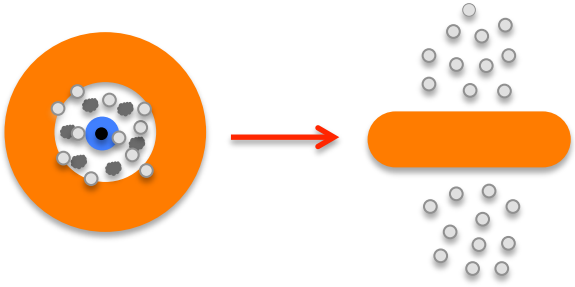
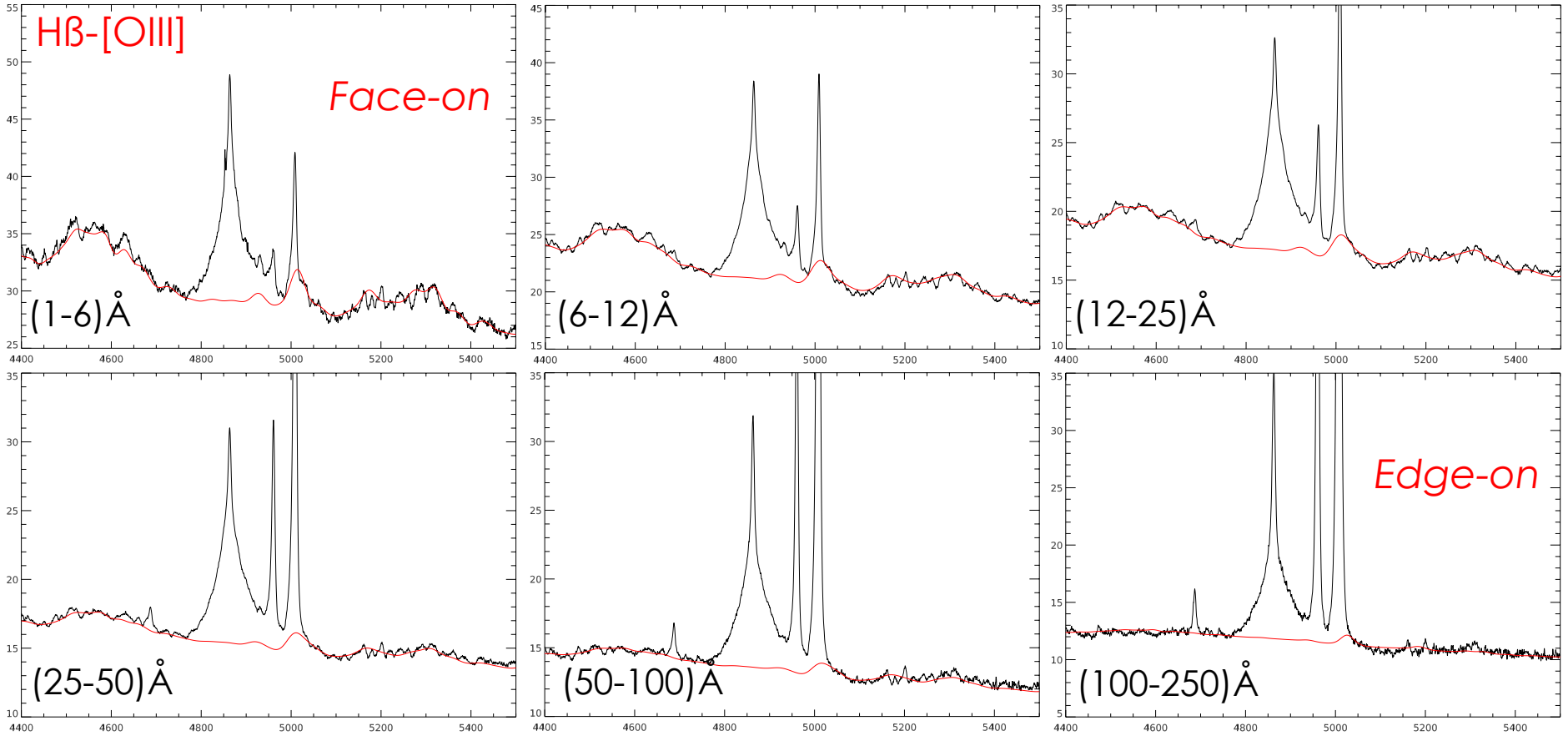




FeII and EV1



EIGENVECTOR 1
Boroson&Green (1992)



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Bisogni et al. in prep.

* Behaviours of both narrow and broad lines components
* Torus emission
* Eigenvector 1

PERSPECTIVES

* Better understanding of Unified Model components geometry and kinematics
* Corrections in BH virial masses estimations

Orientation in quasars: EW[OIII] as an inclination indicator

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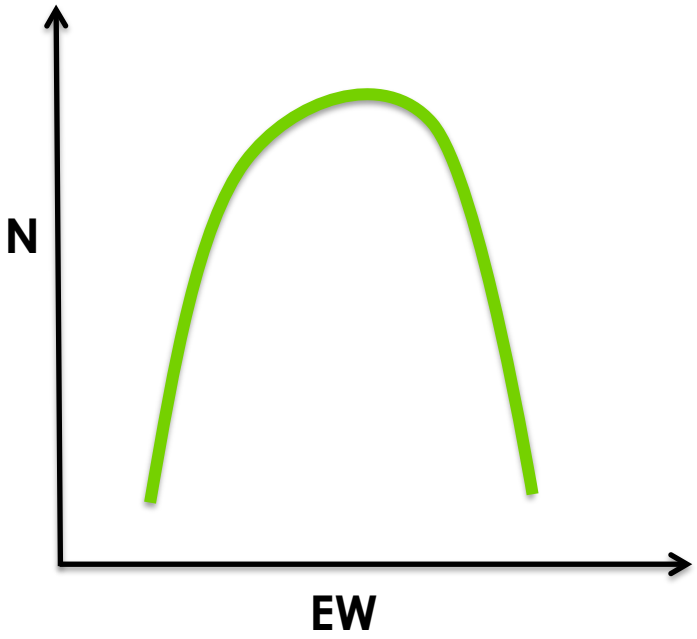
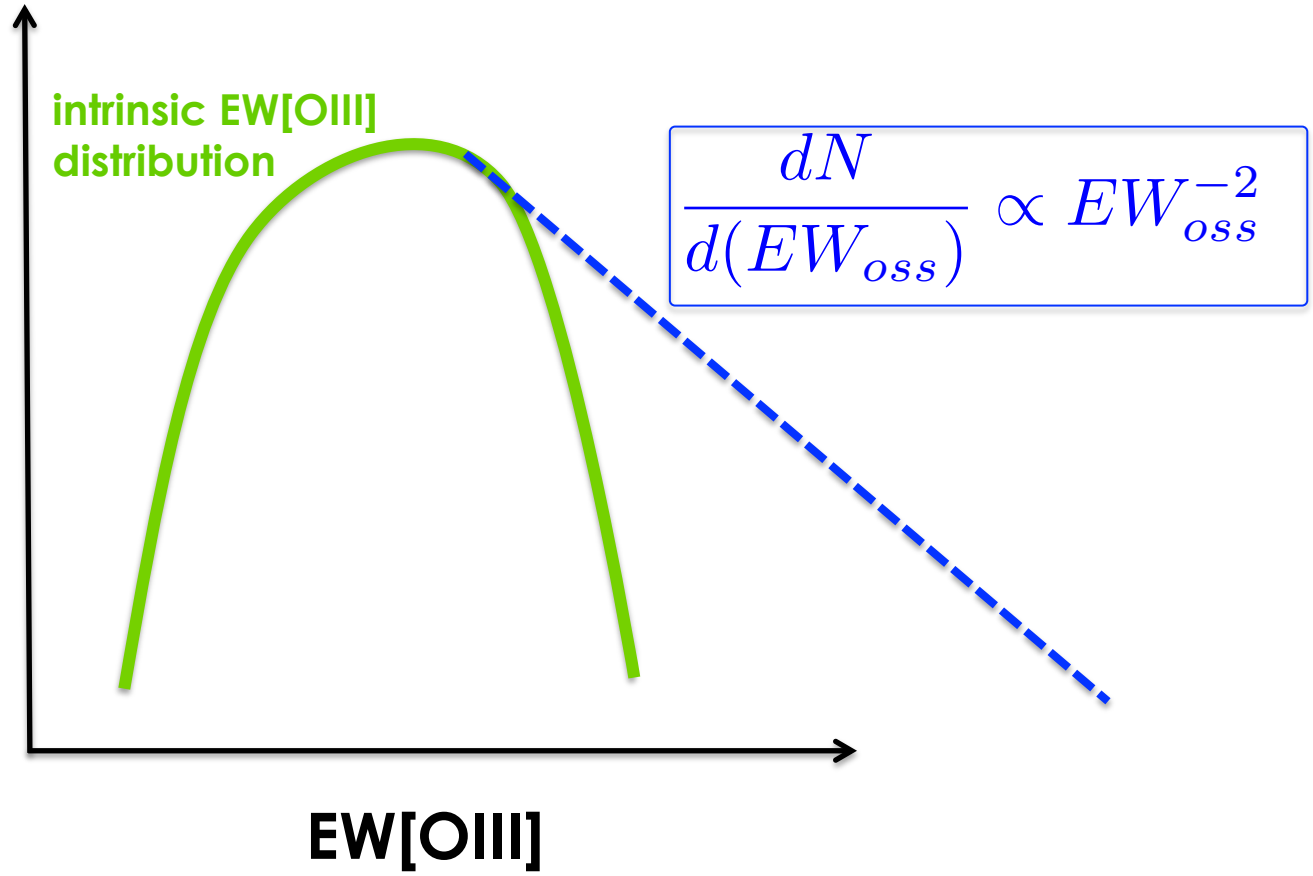
Inverse (inclination) distribution



EW_1^* (Å)	8.0 ± 0.3
σ_1 (Å)	4 ± 0.3
EW_2^* (Å)	17 ± 1
σ_2 (Å)	11 ± 0.8
α	0.67 ± 0.01

EW[OIII] quasars distribution

IDEAL ISOTROPIC CASE



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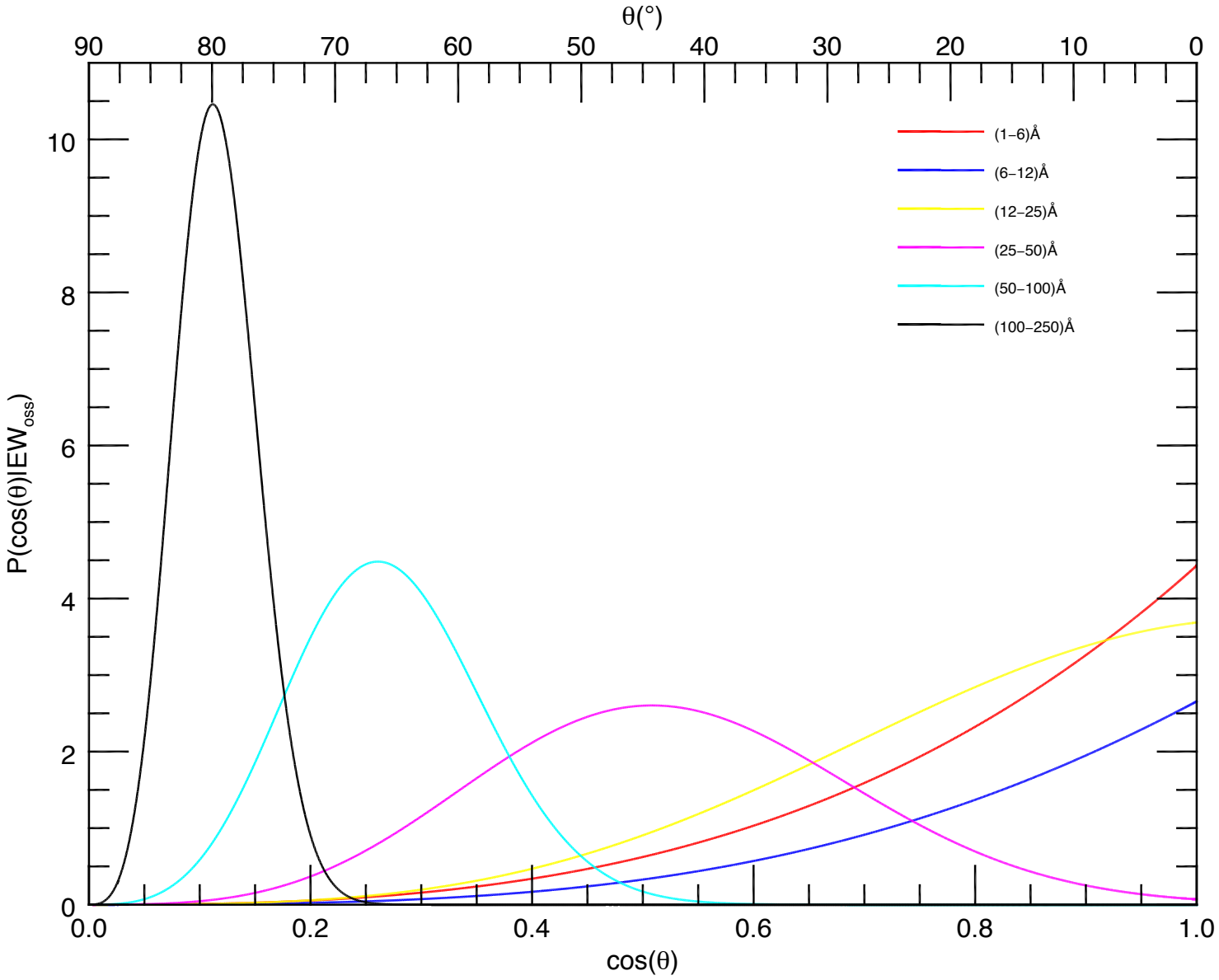

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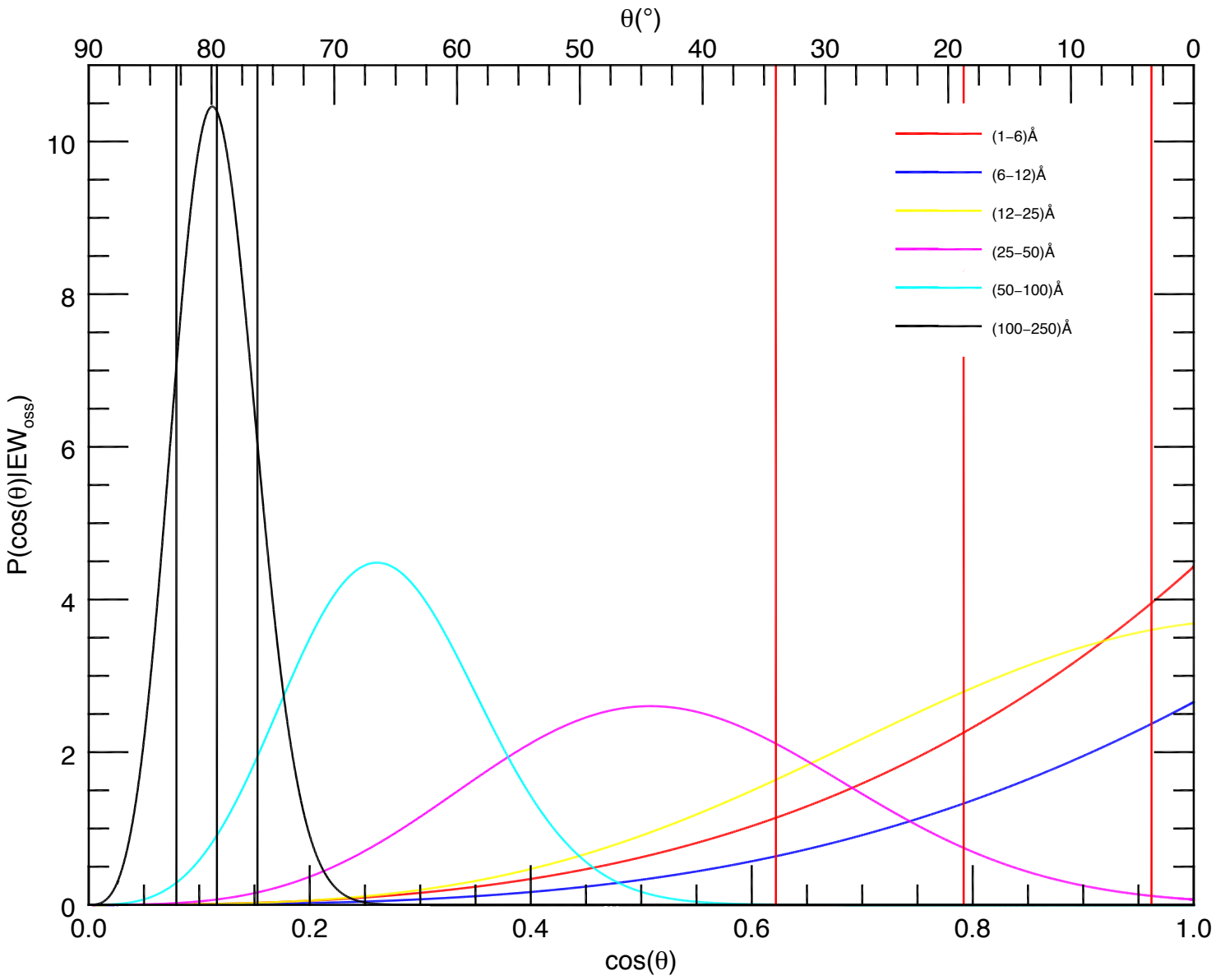

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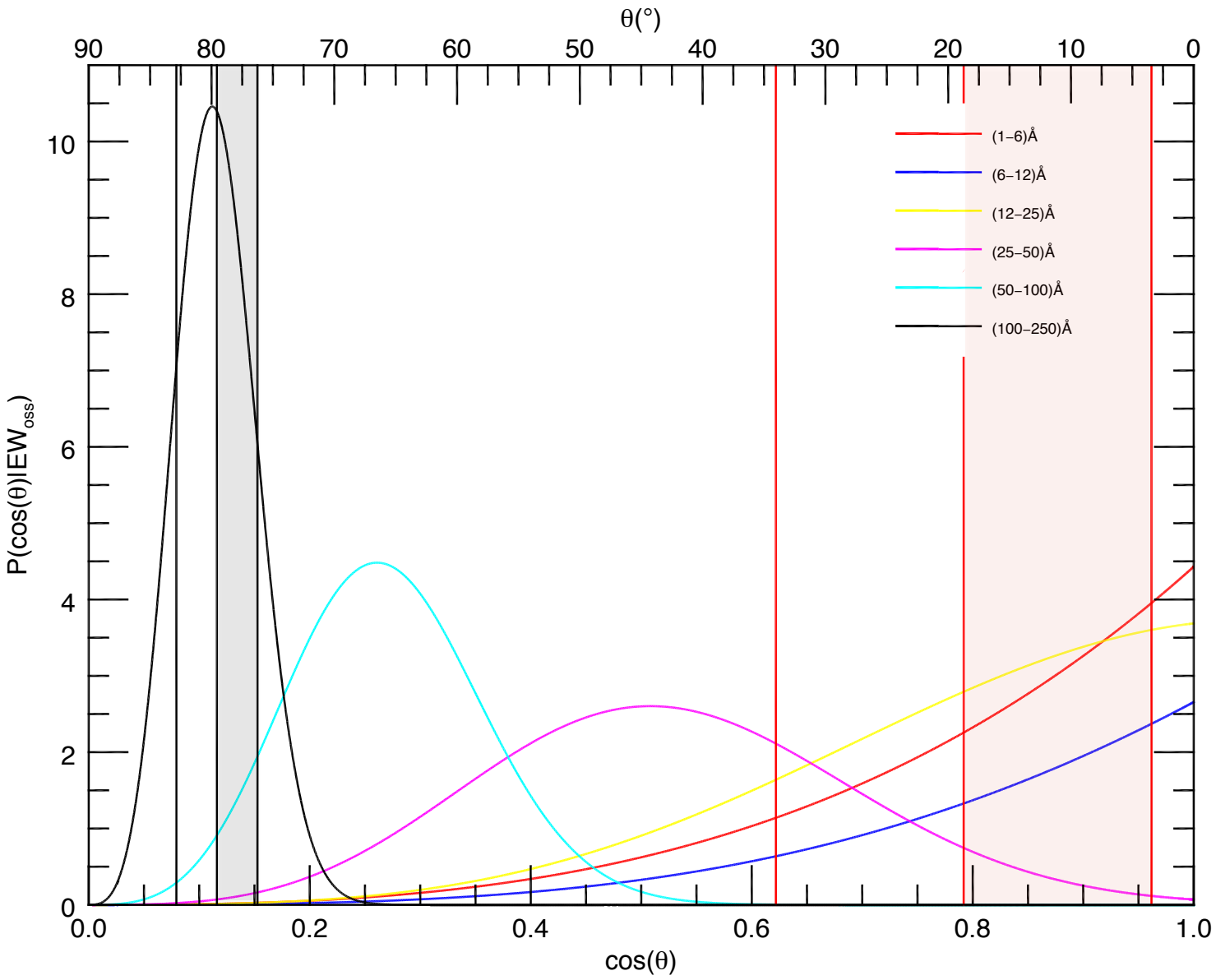
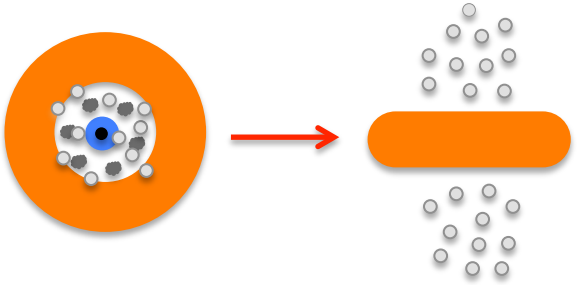


Narrow Lines



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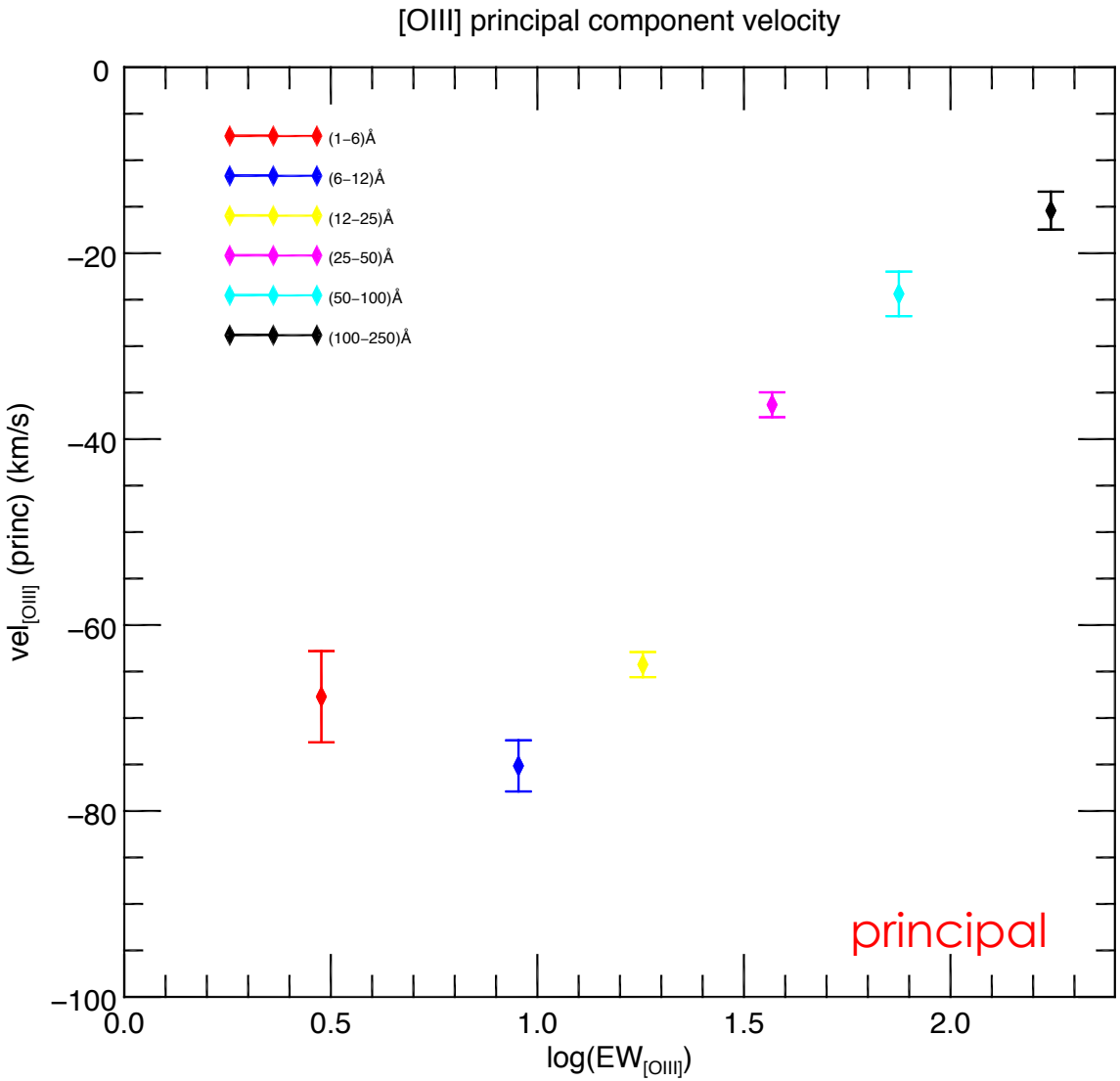
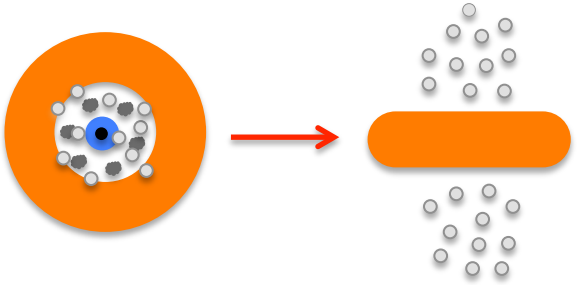
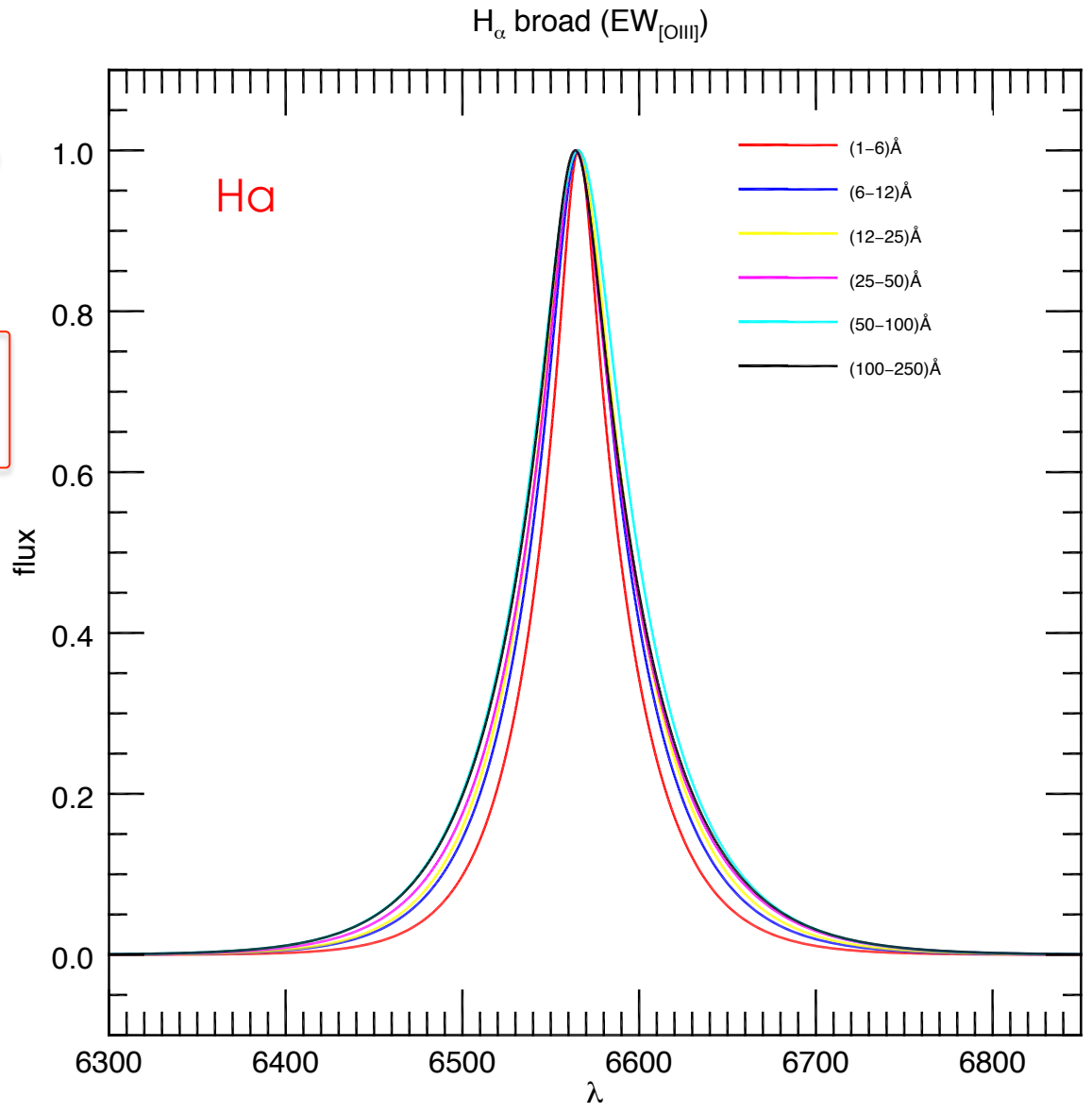


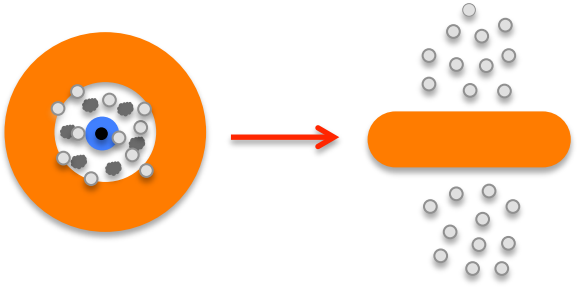
Broad Lines



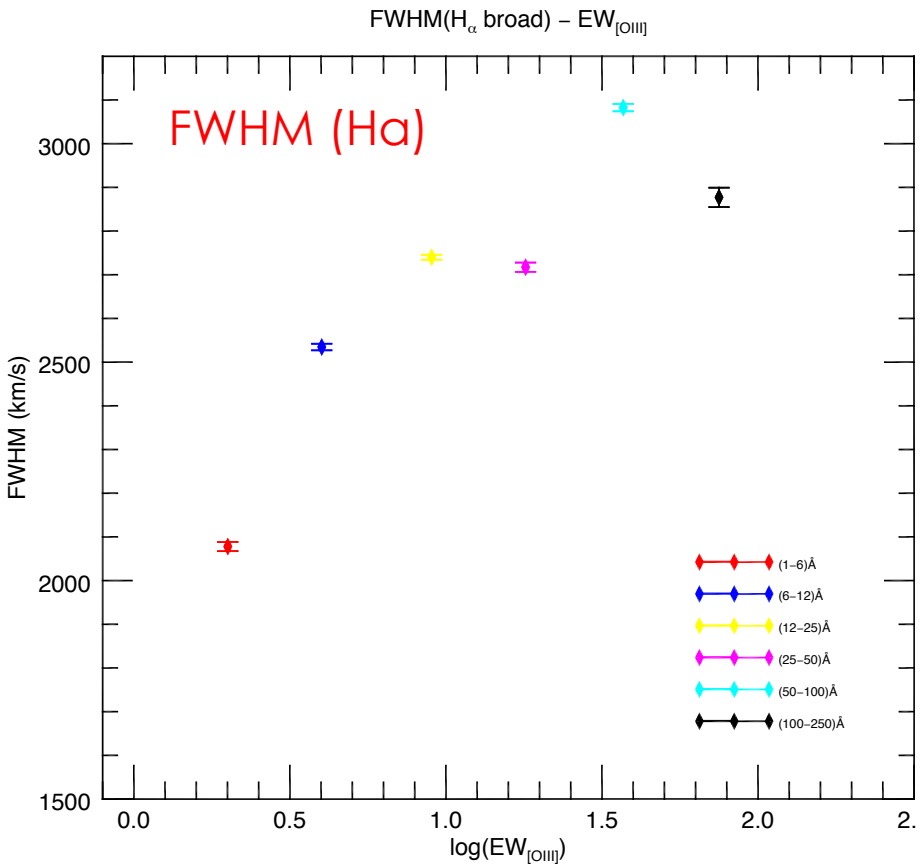
$$v_{oss} = v_{rot} \sin \vartheta$$

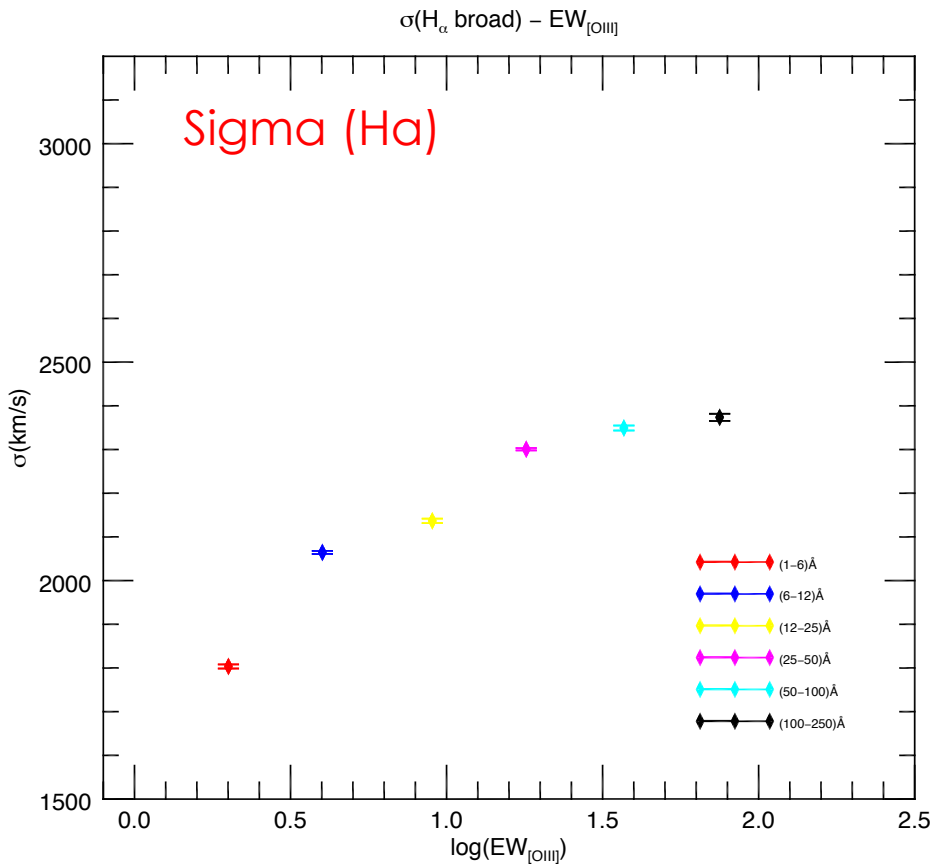


Broad Lines

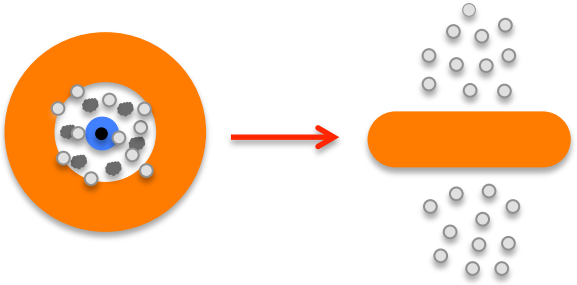


$$v_{oss} = v_{rot} \sin \vartheta$$

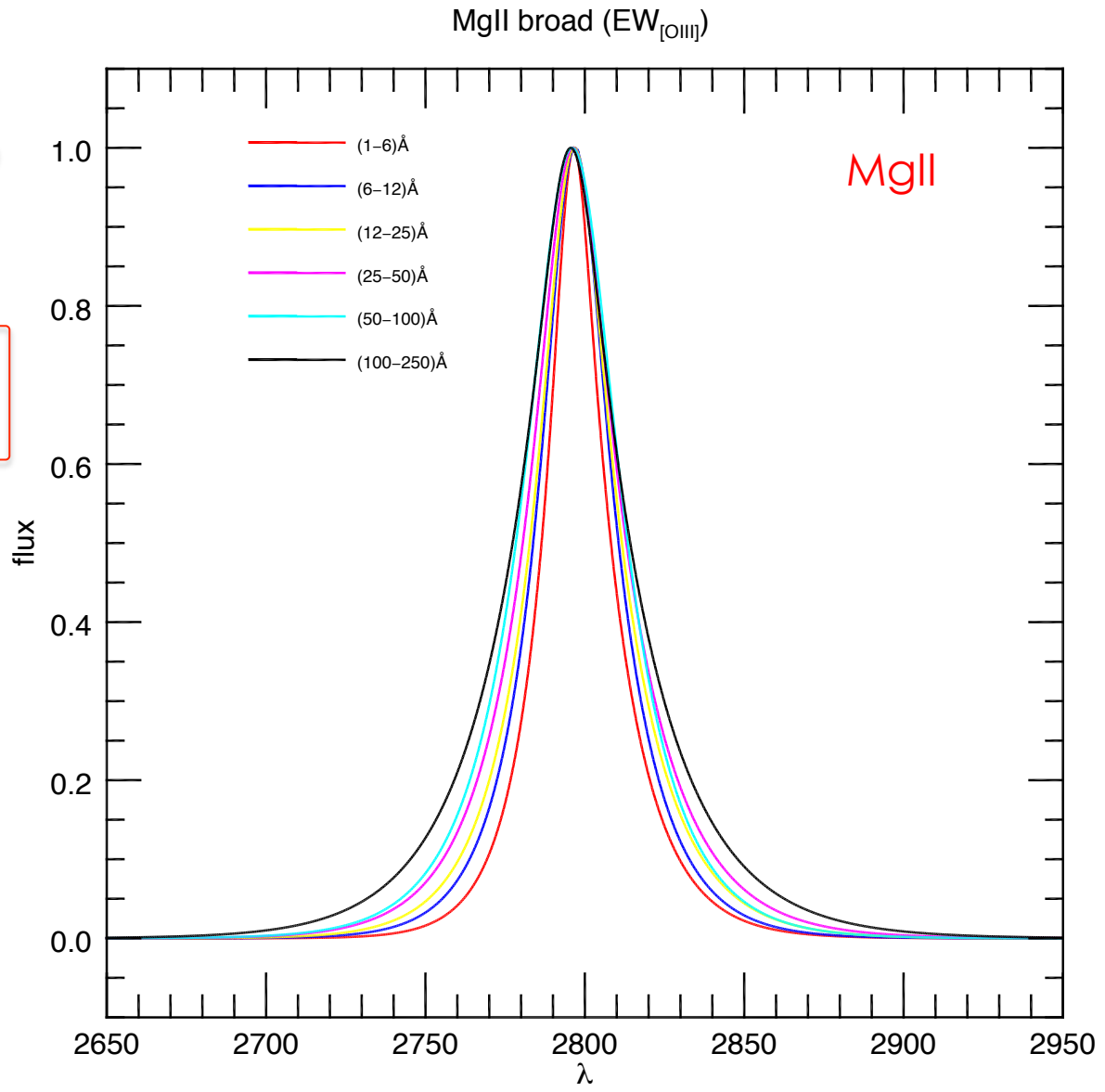




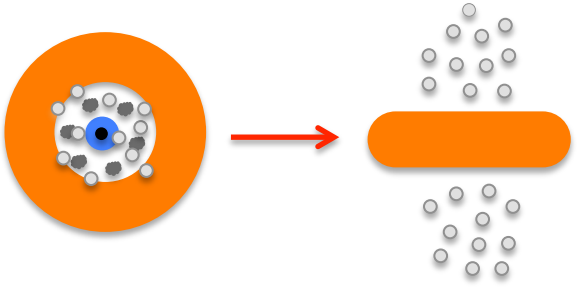
Broad Lines



$$v_{oss} = v_{rot} \sin \vartheta$$



Broad Lines



$$v_{oss} = v_{rot} \sin \vartheta$$