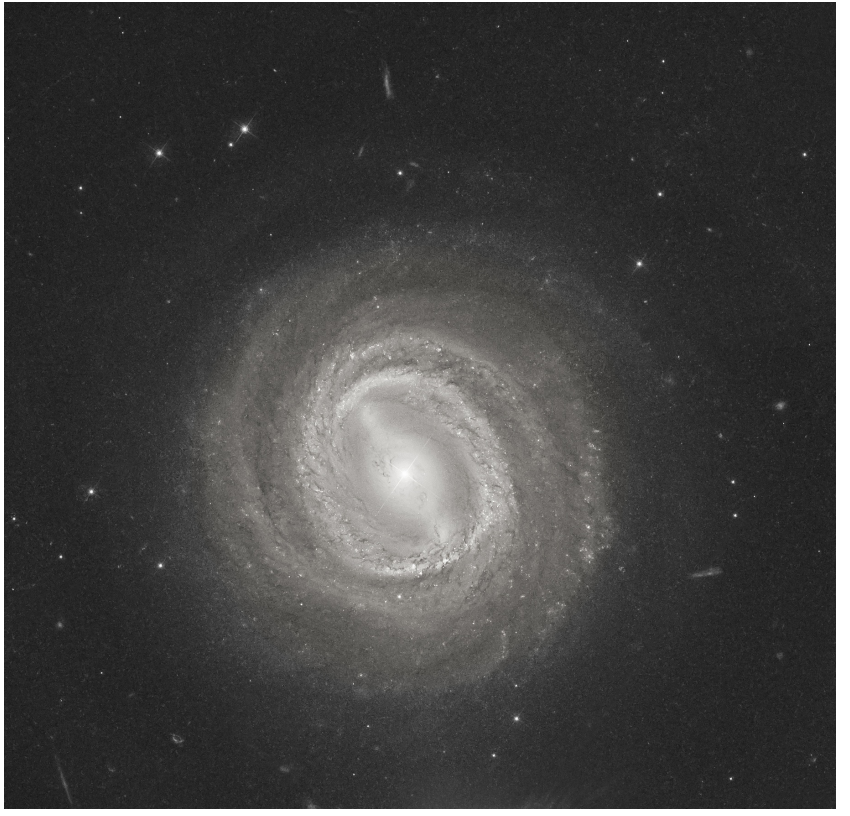
LabX 2020-2021

What happened to the Seyfert 1.5 NGC 3783?



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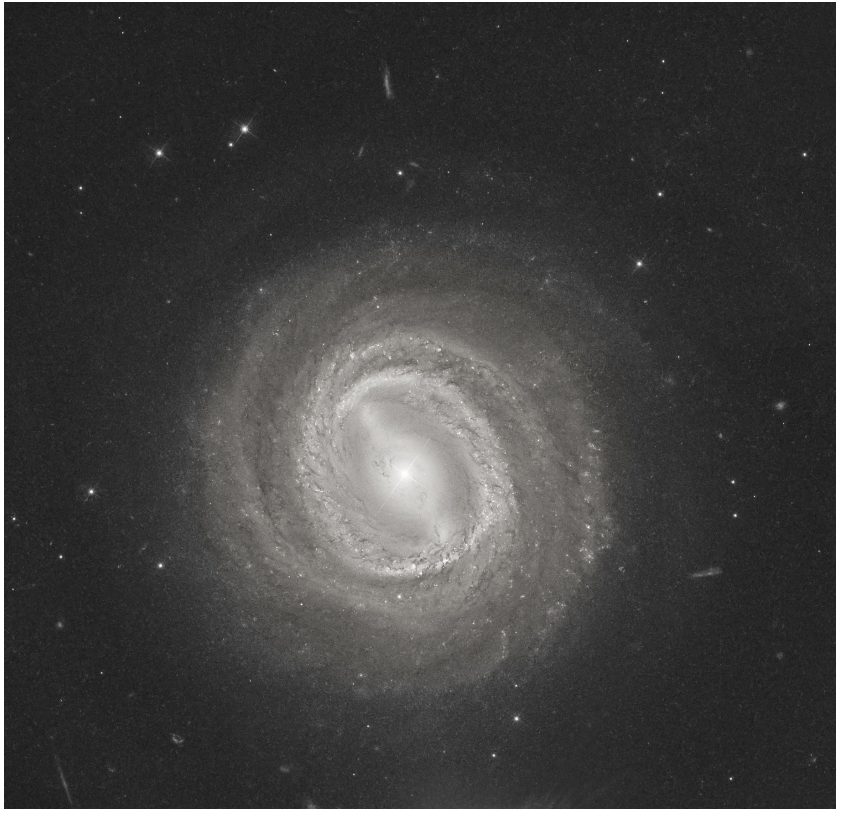

Target i.d.

Object type: G

Morphology: (R')SB(r)ab

Activity Type: Sy 1.5

z≈0.009371

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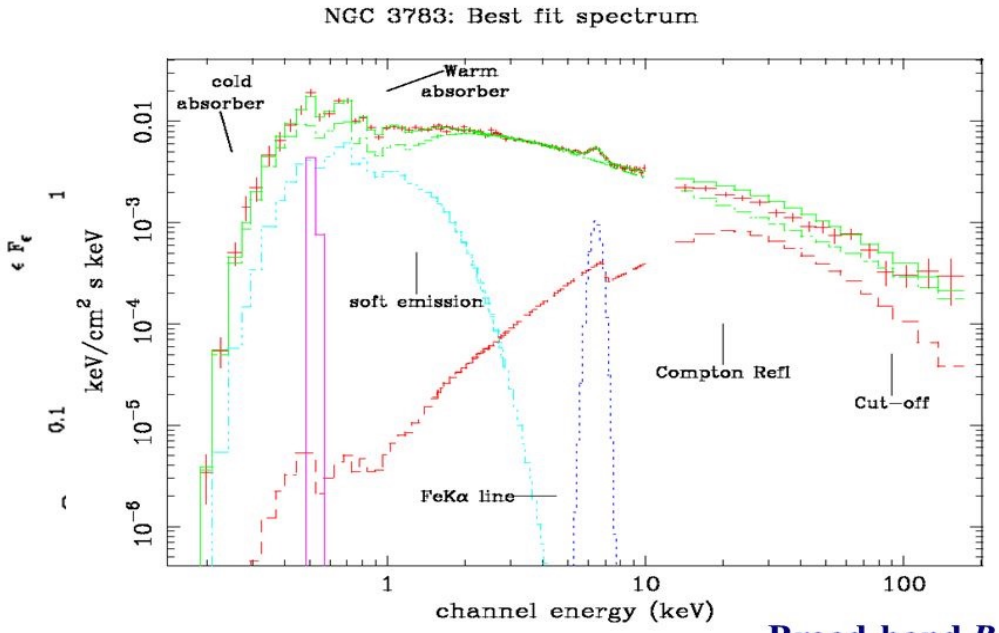
The complex X-ray spectra



Broad-band *BeppoSAX* observation NGC 3783.
De Rosa et. al 2002

Very "typical" Seyfert 1 X-ray spectrum measured in all the X-ray observations

1) Very low cold absorption (in the UM scenario, it indicates that the putative dusty torus is not intercepting the line of sight. Ok for a type I AGN)

2) Fe line and reflection component detected → OK with the presence of accretion disk!

3) High-E cutoff measured at E≈100 keV: OK with thermal Comptonization

4) warm absorber measured: → ok with UM and presence of warm electrons along the polar axis of the system to explain measurement of broad lines in polarized light (optical)

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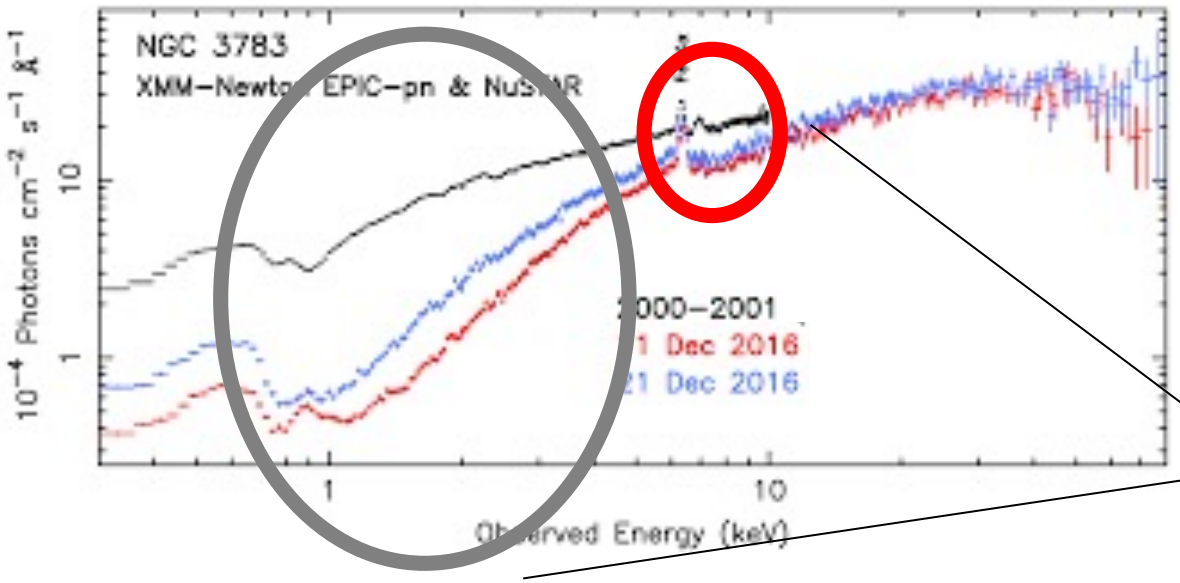

Mehdipour et al., 2017

Goals

1) What are the properties of the primary emission of NGC 3783?

2) What are the properties of the absorbers in NGC 3783?

3) Are these properties in agreement with the predictions of UM for AGN?

… but something changed… (optional part)

4) the changes were driven by the primary emission and/or the absorber?

5) can I interpret these changes within the UM scenario? How?

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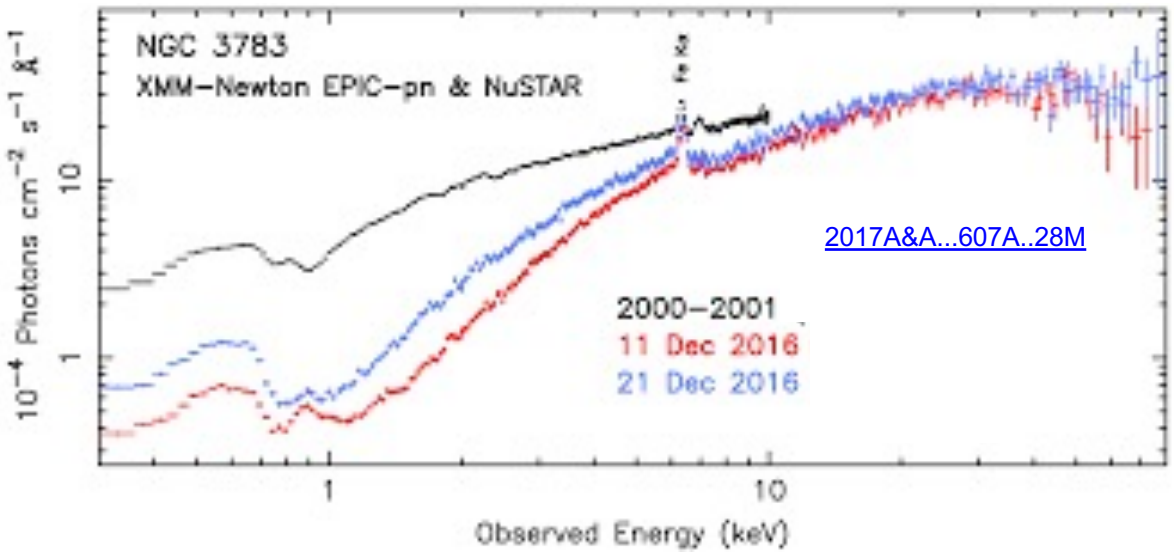
How



Reference papers:

De Rosa et al., 2002, A&A, 387, 838
Mehdipour et al., 2017, A&A, 607, 28

Mandatory part

a) use only one XMM-Newton observation

b) use only EPIC/pn data in the 3-10 keV band

c) perform data reduction and spectral analysis to infer:
c-1) shape of the primary continuum;
c-2) column densities and ionization states of the absorbers;
c-3) dimensions of the regions where the Fe line is produced;
c-4) reflection?
c-5) something else?

Optional part

d) re-do everything on the other observation, then compare and discuss the differences!