LabX 2020-2021

What happened to the Seyfert 1.5 NGC 3783?

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Target i.d.

Object type: G

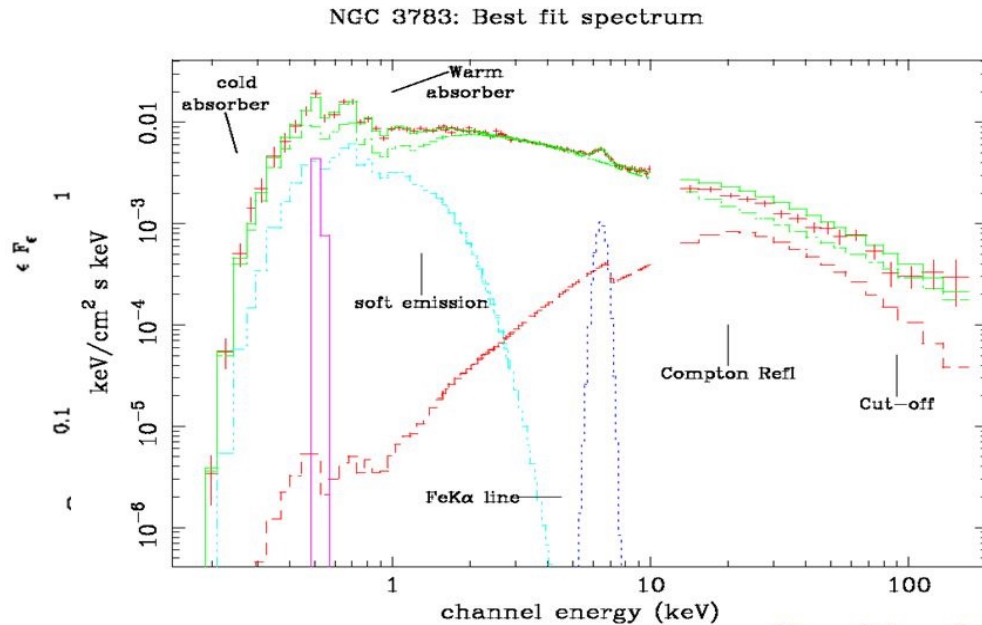**Morphology: (R')SB(r)ab**

Activity Type: Sy 1.5

z≈0.009371

What happened to the Seyfert 1.5 NGC 3783?

The complex X-ray spectra

NGC 3783: Best fit spectrum

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

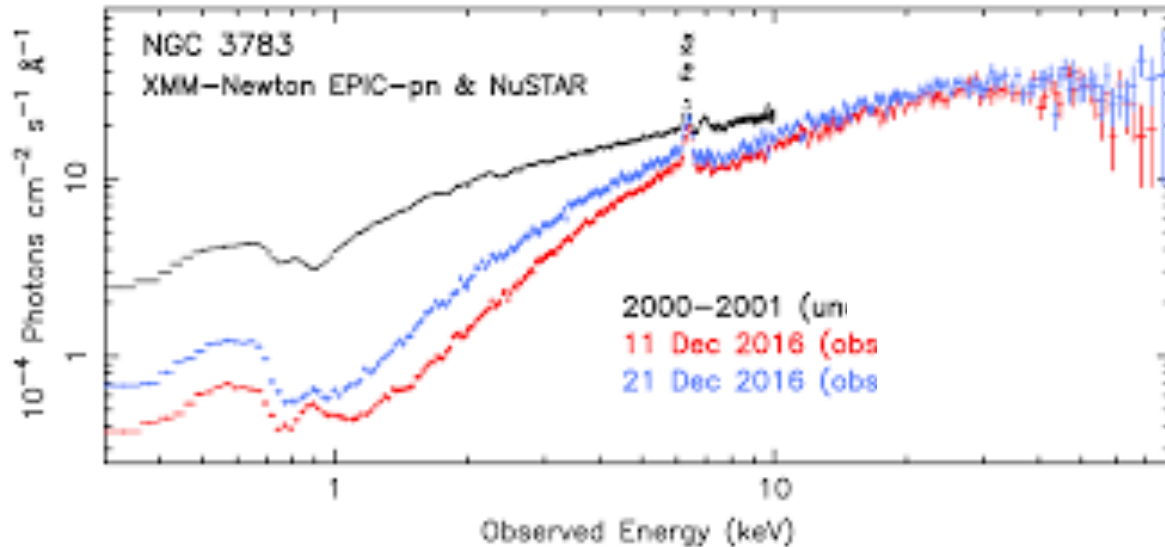2) Fe line and reflection component detected → OK with the presence of accretion disk!

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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NGC 3783
XMM-Newton EPIC-pn & NuSTAR

2000-2001 (un
11 Dec 2016 (obs
21 Dec 2016 (obs

Reference papers:

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

Goals

1) **Is the source stable during the observation? (light-curve in the whole band and in different bands? Evidences for spectral variations? -> Ratios?)**

2) **What are the properties of the primary emission of NGC 3783? (what's the spectral shape? What are the values of the parameters? Flux? Luminosity?)**

3) **Is the source absorbed? How? (Quantity and quality?)**

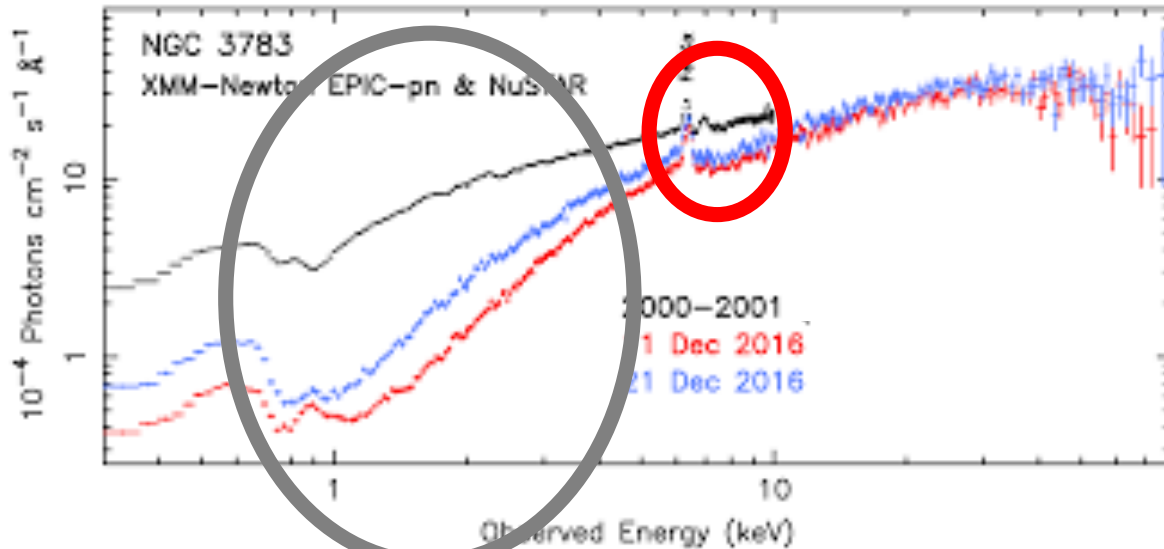4) **Property of the Fekα line (E? EW? Width?)**

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

Can I interpret these changes within the UM scenario? How?

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How

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 study:

c-0) light-curves

c-1) shape of the primary continuum;

c-2) column density and properties of the absorber

c-3) properties of the FeKα line

Optional part

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