dr hab Alex Markowitz

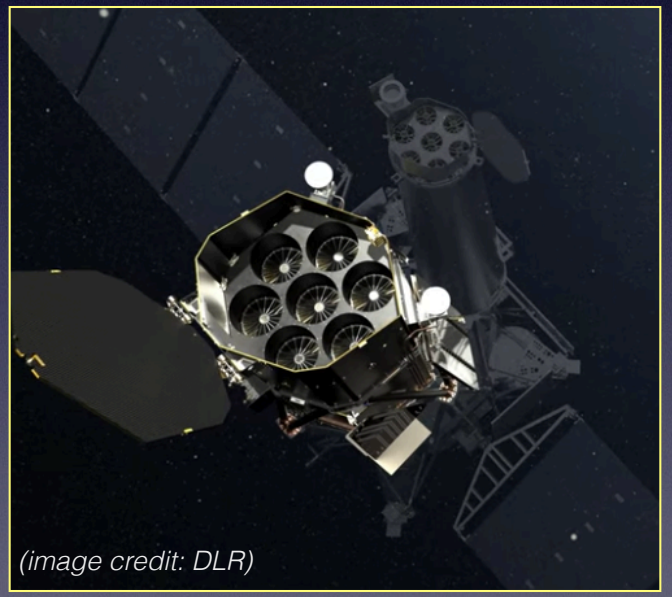
Properties of accretion flows & circumnuclear accreting/outflowing gas
in Active Galactic Nuclei, via variability & spectroscopy

Current pursuit: X-ray-Detected SMBH transients with eROSITA

Work with German eROSITA consortium as an External Collaborator (Ongoing bilateral NCN/DFG grant):

eROSITA's all-sky X-ray surveys ⟶ identify SMBH accretion ignition or shutdown events

My focus: Track responses/formation of accretion structures during extreme variations in global or local accretion rate



(image credit: DLR)

X-ray-Detected SMBH Transients with eROSITA

Dedicated multi-λ followup campaigns for selected individual targets:

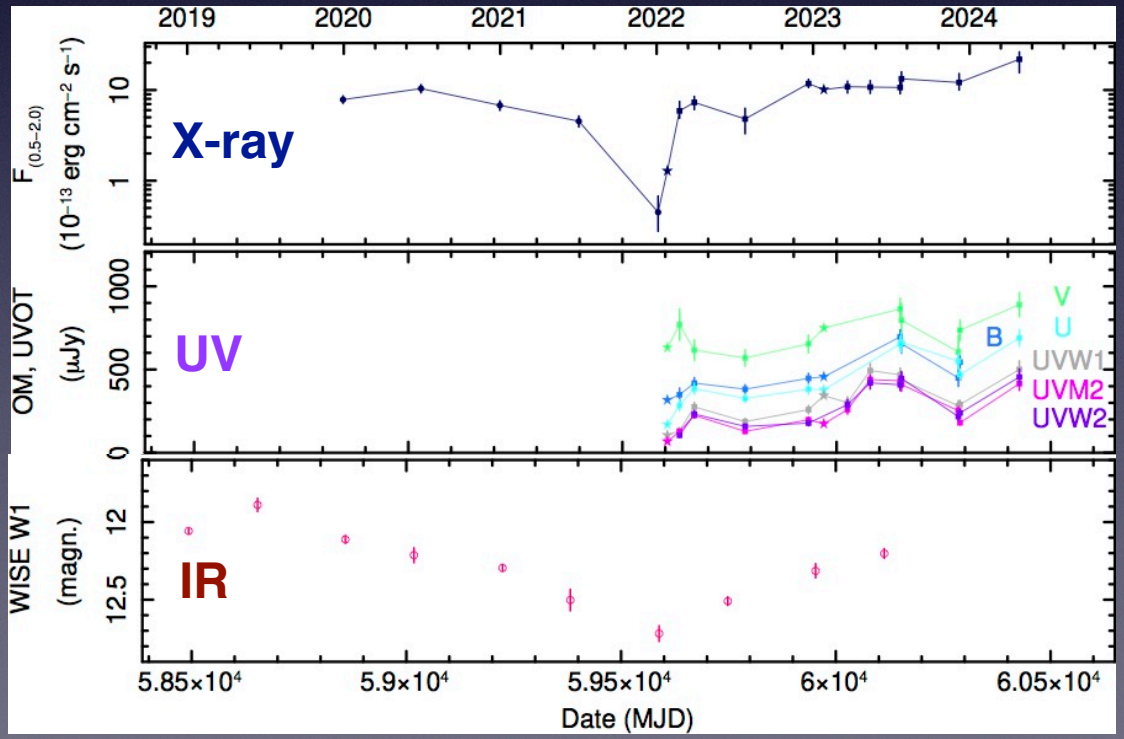
X-ray (eRASS, XMM, Swift, NICER): ⟶ corona

Opt./UV photometry (LCO, Swift): ⟶ accretion disk

Opt. spectroscopy (SALT, SAAO, VLT): ⟶ Broad Line Region

Main analysis focus in 2024 (Markowitz et al., in prep):

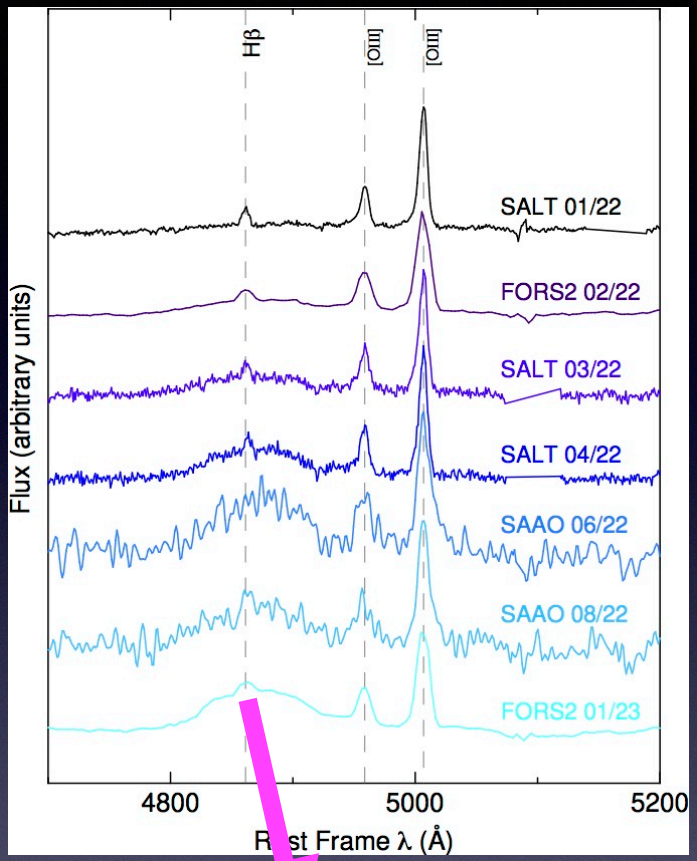
Seyfert wiith sudden luminosity dip and recovery during 2021-2022 — a temporary accretion shutdown:

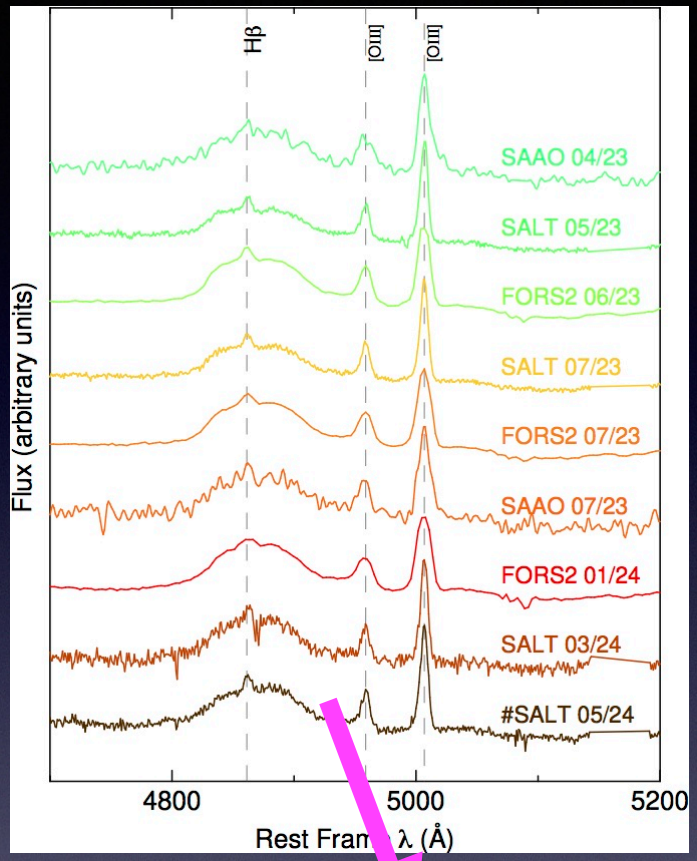


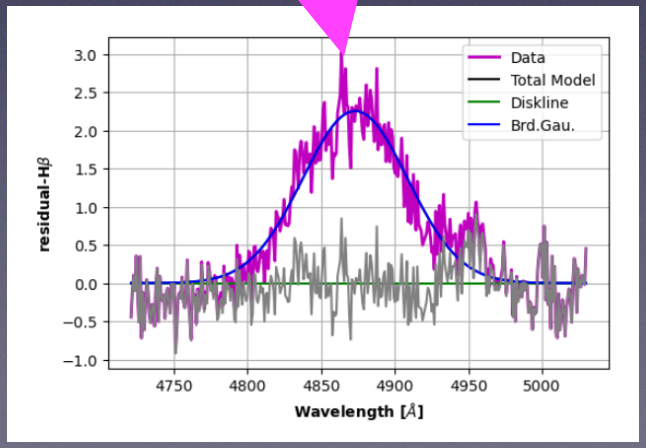
During 2022
(lumin. recovery):

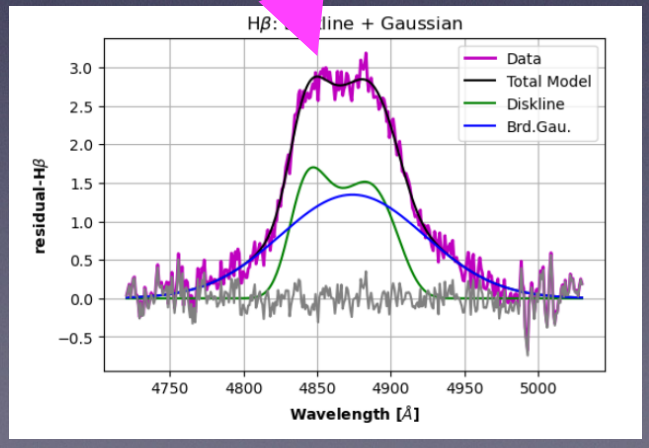
Broad Hβ:

2023–2024:









Two-component BLR with differing responses:

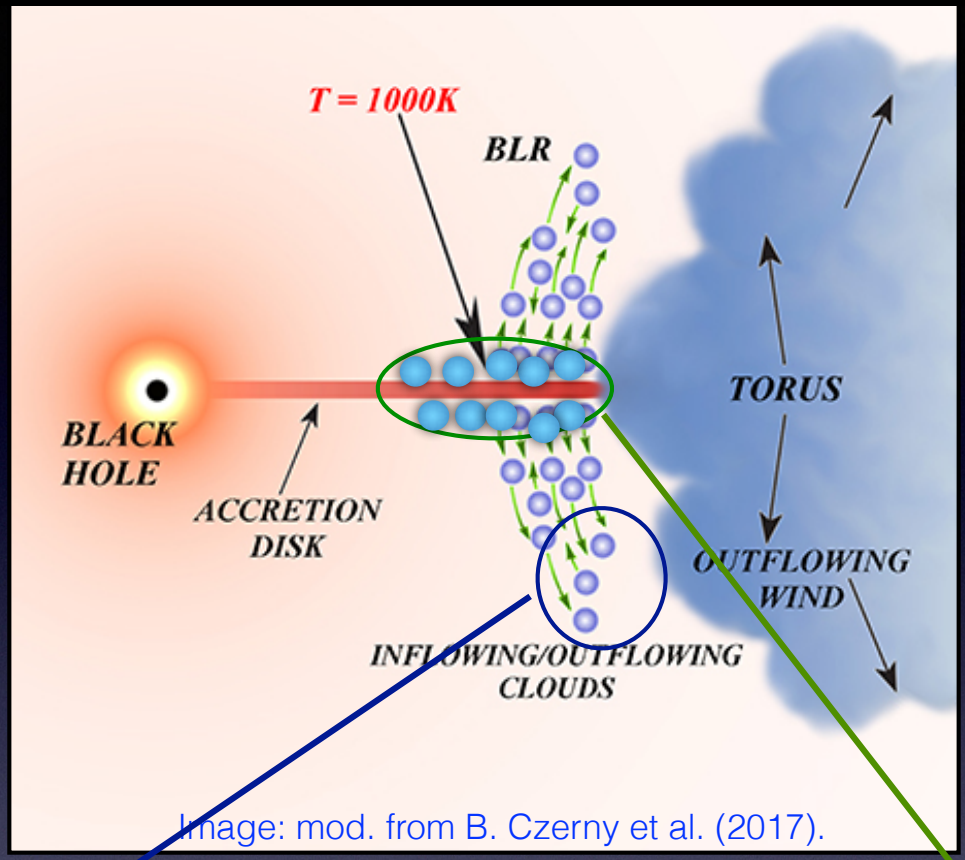
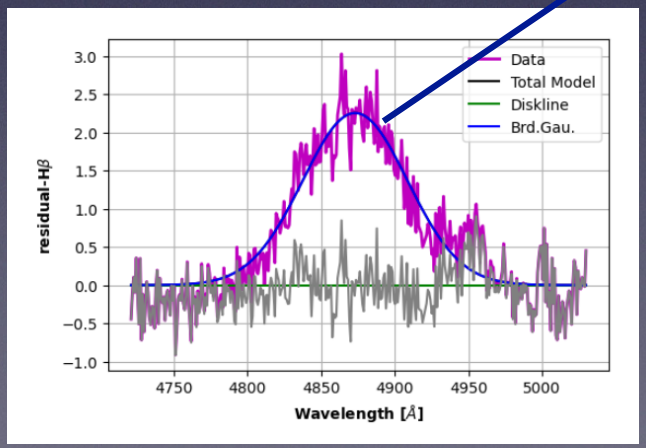
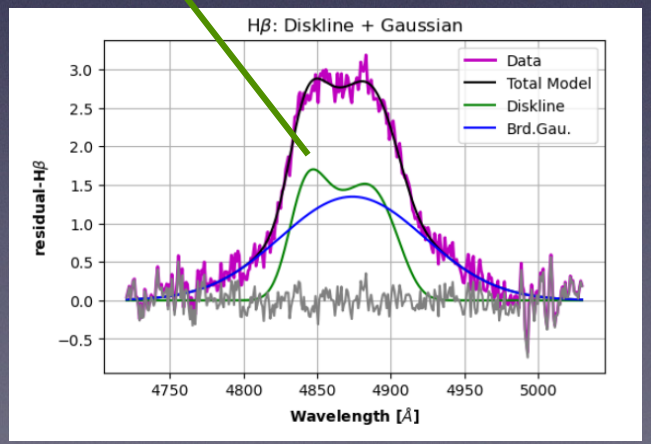


Image: mod. from B. Czerny et al. (2017).

During 2022 (lumin. recovery): Elevated clouds at R = 20 lt-dy



2023-2024: Disklike clouds at R= 7 lt-dy emit more strongly



Other updates during 2024:

S. Krishnan et al., (2024, A&A) — *Published*
& T. Saha et al (A&A, submitted) — still under review:

Papers on two "Changing Look" Seyferts:
Accretion disk instabilities drove temporary spikes in accretion, X-ray/UV luminosity, optical broad lines (Hβ, He II λ4686), IR dust echo

A. Markowitz et al., (2024, A&A) — *Published:*

J0458-5202: Variable-obscuration Seyfert:
Dust-free clouds or disk wind residing in outer BLR

Work in progress for individual transient events continues…..

Look for more forthcoming papers (soon)!

(image credit: DLR)

2024 service, mentoring, etc:

PhD students at CAMK:
T. Saha (Thesis defended, March 2024)

Fall 2024: Added as member of NewAthena XIFU Consortium and
XIFU Science Advisory Team

SOC, Conference “Galactic and extragalactic X-ray transients, theory and observational perspectives”, Warsaw (organizer: CFT), Sept. 2024

External reviewer: PhD thesis @ Jagellionian Univ.

Popular science talk @ CAMK, June 2024, on T CrB eruption.

New observing proposals as PI: SALT (2)

Member of
— Rada Naukowa CAMK
— Komisja ds nagród; Komisja ds konkursów

Other publications:
A. Gokus et al, 2024, MNRAS, 529, 1450, “Rapid variability of Markarian 421 during extreme flaring as seen through the eyes of XMM-Newton”