PRAGUE AGN SEMINAR SERIES
September – December 2021

Astronomical Institute of the Czech Academy of Sciences

18th October
15:00 CEST

– ***Obscured AGN Growth in Mid-IR Dual AGNs and Beyond***
– Presented in English by: **Ryan Pfeifle**
(George Mason University, USA)
– bgc.physics.gmu.edu/black-hole-experts/
– ***Abstract:***

Galaxy collisions, a ubiquitous phenomenon in the Universe, are predicted to be a critical avenue for galaxy and black hole growth and evolution. During a merger event, gravitational torques drive reservoirs of gas and dust toward the galactic cores, and these inflows are consequently accreted by the central supermassive black holes, which then manifest as active galactic nuclei (AGNs). Dual AGNs are expected to occur in late-stage mergers, where the black holes are predicted to experience their most rapid period of growth. In our *Chandra* investigation of 15 late-stage mergers preselected with *WISE*, we found dual AGNs or candidate duals in 8 out of 15 mergers, many of which show no evidence for AGNs in the optical. Our multiwavelength observations suggest that the AGNs in these mergers are highly absorbed, with intrinsic column densities in excess of $N_{\rm H} > 10^{23} - 10^{24}$ cm^{-2}, consistent with hydrodynamic simulations. One of these mergers, SDSS J0849+1114, was in fact a triple galaxy merger, and exhibited three nuclear X-ray sources detected by *Chandra*. Through a multiwavelength follow-up program, we demonstrated that SDSS J0849+1114 represents the most compelling case for a triple AGN in the literature and has since been confirmed by two further studies. We will also discuss more recent work related to obscured AGN growth more generally, highlighting a new X-ray/mid-IR diagnostic for AGN obscuration identified in our study of Swift/BAT AGNs. This diagnostic relies upon the well-known $L_{\rm X,Obs.}/L_{12\,\mu{\rm m}}$ luminosity ratio as well as mid-IR colors to select heavily obscured Swift/BAT AGNs ($\log[N_{\rm H}] > 23.5$) with high completeness and reliability. Our new obscuration diagnostic could be used to differentiate between unobscured and heavily obscured AGNs in future, large samples of AGNs, such as those now being detected by the eROSITA all-sky survey.

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1st November
13:00 CEST

- ***Binary/dual accreting supermassive black holes with XMM-Newton***
- Presented in English by: **Dr. Matteo Guainazzi** (ESA/ESTEC, Netherlands)
- www.cosmos.esa.int/web/personal-profiles/matteo-guainazzi

10th November
16:00 CET

- ***Bayesian techniques to search for binary/dual accreting supermassive black holes***
- Presented in English by: **Dr. Adi Foord** (KIPAC/Stanford University, USA)
- www.adifoord.com

15th November
13:00 CET

- ***Particle acceleration and radio emission in AGN jets: shocks, flickering and ultrahigh energy cosmic rays***
- Presented in English by: **Dr. James Matthews** (University of Cambridge, UK)
- jhmatthews.github.io

6th December
13:00 CET

- ***Supermassive black hole pairs in nearby galaxies and black hole mass measurement***
- Presented in English by: **Dr. Sabine Thater** (University of Vienna, Austria)
- ucris.univie.ac.at/portal/en/persons/sabine-thater(8c59f4bc-7e30-477b-894c-e1680aa62b2f)/publications.html