

The restless nature of AGN: 10 years later



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A narrow-line Seyfert 1 galaxy with disappearing broad-line region: J0413-0050

The multi-epoch observations over 15 years have led to the identification of a new class of active galactic nuclei (AGN), showing incredible spectral and flux changes: the changing-look (CL) AGN. The reason behind this peculiar behaviour could be changes in the accretion rate of the supermassive black hole, inducing variability in the continuum emission, or changes in the line-of-sight column density, possible due to a passing cloud or nuclear outflows, obstructing our view of the central engine. Here I present a peculiar object, 2MASX J04130709-0050165, identified as a narrow-line Seyfert 1 (NLS1) galaxy based on the Six-degree Field Galaxy Survey (6dFGS) spectrum. The 6dFGS spectrum taken in 2004 shows the classical features of an NLS1: narrow H β broad line emission and narrow forbidden lines. This source was recently observed again: with the New Technology Telescope in early 2021 and with the Nordic Optical Telescope at the end of 2021. These new spectra show the clear disappearance of the H β line while H α line only changes in shape and the [OIII] line is unchanged. In my talk I will present the multi-wavelength data we retrieved and the comparison with the previous observations, showing how such a particular change in the spectral feature of this object is in agreement with the CL hypothesis. According to the preliminary results, the disappearance of the broad-line region, causing the dramatic spectral change, is consistent with a major change in the accretion rate. This could possibly indicate that the AGN is switching off, but more data will be necessary to confirm this scenario.

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