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The origin of UFOs in AGN

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UltraFast Outflows (UFO) are seen in some active galactic nuclei (AGNs), with blueshifted absorption lines of highly ionised iron ion. AGN typically has a UV-bright accretion flow, so UV line driving is an obvious candidate for launching these winds. However, it requires that material in the acceleration zone has substantial UV opacity, in conflict with the observed very high ionisation state of the wind. We use a state of the art UV line driven wind simulation (full radiation hydrodynamics), and demonstrate that there are some lines of sight which only intercept fast and highly ionised material. The cooler material required for the acceleration is out of the line of sight, close to the disc, shielded from the X-rays by a failed wind. We show that resonance line scattering in the wind can reproduce the broad Fe-K feature seen in the lag-energy spectra. New data from the microcalorimeters will allow us to test this, paving the way for a physical model of the mass loss rate of UFOs.

Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

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