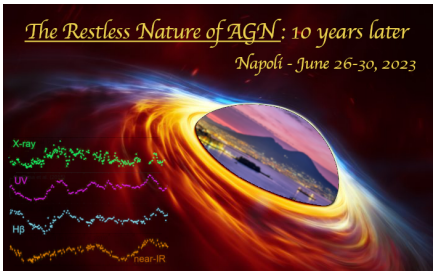

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Modelling thermal reverberation in active galactic nuclei

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Several active galactic nuclei (AGN) show UV/optical variability lagging behind the X-ray emission by a few days. The simplest and most straightforward interpretation is that the variable X-ray flux from the corona illuminates the accretion disc below where it is partially reflected and observed as fast X-ray reverberation signal, and partially absorbed and thermalised in the disc, which produces a slow UV and optical reverberation signal. Since the corona is thought to be centrally located and very small compared to the accretion disc, it first illuminates the hottest inner parts of the accretion disc and later on its colder further out areas. Thus one expects to see the original X-ray fluctuations to be firstly followed by variations in the UV and then in the optical wavebands.

In this talk, I will present our newly developed full GR-ray-tracing code that computes the thermally reverberated UV/optical continuum responding to X-ray illumination by a compact corona. Our code considers the mutual interaction of the accretion disc and the X–ray corona. I will discuss how the properties of the system (e.g., black hole spin, accretion rate, corona height, etc.) affect the UV/optical time lags. I will also present our results from modelling the observed lags obtained from long monitoring of bright local AGN.

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