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PROBING THE EVOLUTION OF ACTIVE GALACTIC NUCLEI USING THE IRON Kα LINE

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Active Galactic Nuclei (AGN) are the most powerful persistent sources of radiation in the Universe. A large fraction of the AGN output power is emitted in the X-rays, in a region very close to the supermassive black hole (SMBH). The most distinctive feature of the X-ray spectra of AGN is a narrow iron Kα line, thought to be produced in the circumnuclear material, likely in the molecular torus. Given its origin, the iron Kα line is possibly the most important tracer of the matter surrounding the supermassive black hole. One of the most interesting characteristics of the Fe Kα line is the decrease of its equivalent width (EW) with the continuum luminosity, the so-called *X-ray Baldwin effect* (Iwasawa & Taniguchi 1993). Several explanations have been proposed in the last decade to explain this effect: i) a luminosity-dependent variation in the ionisation state of the iron-emitting material (Nandra et al. 1997); ii) the decrease of the number of continuum photons in the iron line region with the Eddington ratio, as an effect of the known photon index-Eddington ratio correlation (Ricci et al. submitted); iii) the decrease of the covering factor of the torus with the luminosity (e.g., Page et al. 2004) as expected by luminosity-dependent unification models (e.g., Ueda et al. 2003). In my talk I will review the main characteristics of the Fe Kα line, and present the results of a recent work aimed at explaining the X-ray baldwin effect using an iron-line emitting physical torus model with a luminosity-dependent covering factor (Ricci et al. 2013).