MoCA: A MONTE CARLO CODE FOR ACCRETION IN ASTROPHYSICS - THE IRON LINE POLARIZATION CASE

F. Tamborra

Astronomical Observatory of Strasbourg, France

The X-ray spectrum observed in X-ray Binaries (XRBs) and Active Galactic Nuclei (AGN) is complex and constituted by several components, due to the circumnuclear material which scatters, absorbs and reprocesses photons produced by the disc. A common feature in all XRBs and AGN X-ray spectra is a strong Iron K? emission line at 6.4 keV. The line is produced by the reprocessing of X-ray photons absorbed by the neutral disc. These lines often show a broad energy profile and the origin of this broadening is still matter of debate. The two common interpretations are that it is given either by General Relativistic effects or by Comptonization (or, of course, by a combination of the two). One way to discriminate between these explanations is given by the polarization signal. In the case of Comptonization, in fact, some degree of linear polarization is expected to be measured in the line flux while for GR broadening it is not predicted.

In the framework of this scenario we developed MoCA, a code dedicated to the study of the spectrum and the polarization signal produced in accreting sources. We are going to show some results on the Iron line case.