Obscuration model of variability in AGN

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There are strong suggestions that the accretion flow onto massive black hole in AGN proceeds predominantly through an accretion disk in its outer part (100Rg). But closer (10Rg) the radiative pressure dominated optically thick disk is unstable and should be disrupted. It may then form a hot optically thin quasi spherical (ADAF) flow surrounded by or containing denser clouds due to the disruption of the disk. Such clouds might be optically thick, with a Thompson depth of order of 10 or more. Within the frame of this cloud scenario (Collin-Souffrin & al 1996, Czerny & Dumont 1998), obscuration events are expected and the effect would be seen as a variability. Therefore, we consider both random variability due to statistical dispersion in location of clouds along the line of sight for a constant covering factor, and systematical trends with evolutionary change of the covering factor. We discuss a simple analytical toy model which provides us with the estimates of the mean spectral properties, timescales and variability amplitude of AGN, and we support them with radiative transfer computations done with the use of TITAN code of Dumont, Abrassart & Collin (1999) and NOAR code of Abrassart (1999).