Short talk

MICROLENSING EFFECT ON Fe Kα LINE AND X-RAY CONTINUUM IN THE CASE OF THREE GRAVITATIONALLY LENSED QUASARS: MG J0414+0534, QSO 2237+0305 AND H1413+117

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The observed enhancements of Fe Kα line in three gravitationally lensed QSOs: MG J0414+0534, QSO 2237+0305 and H1413+117 is interpreted in terms of microlensing, even if an equivalent X-ray continuum amplification is not observed. To understand these observations we have studied the effects of microlensing on the quasar spectra produced by the crossing of a straight fold caustic across a standard relativistic accretion disk. More realistic case of amplification by a caustic magnification pattern has been studied, also. To describe the disk emission we used a ray tracing method considering both metrics, Schwarzschild and Kerr. Our results show that Fe Kα line is probably emitted from the innermost part of the accretion disk, while the continuum is emitted from some larger region.

Short talk

FRACTIONAL OSCILLATOR AND ANOMALOUS BROWNIAN MOTION IN THE THEORY OF SPECTRAL LINE BROADENING AND SHIFT

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In the paper the fractional oscillator model for the motion of radiating particles in a perturbed gas is suggested. The connection between the fractional oscillator model and anomalous Brownian motion in the Doppler regime is considered. The general formula for the distribution function of the radiating particles in the fractional oscillator model and a new correlation function in the impact approximation are derived. It is shown that the self-similar collision mechanism in the Doppler regime leads to the additional spectral line narrowing and shift. Kinetic equations reconstruction scheme on experimental data is developed on the basis of higher order statistics.