

Abstract Submitted
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Plasma Regimes, and High Frequency QPOs Near Black Holes¹

P. REBUSCO, B. COPPI, MIT, M. BURSA, CU — The observed twin peak non-thermal spectra of High Frequency QPOs are associated with the excitations of spiral modes, with the 3:2 ratio of their frequency. The modulation of the observed radiation associated with general relativistic effects is analyzed, considering different emission processes. These are connected to strong variations of the plasma density corresponding to local rarefaction and compression, associated with the excited spirals. These modes [1] can grow under the combined effects of the differential rotation and the vertical gradients of the plasma density and temperature. The spirals are localized over radial widths that defines one of the regions surrounding a black hole and have frequencies that are multiples of the plasma rotation frequency. The high toroidal number m_ϕ modes are considered to decay into $m_\phi = 2$ and $m_\phi = 3$ modes.

[1] B. Coppi, *A&A* **504**, 321-329 (2009).

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