Astrophysics > High Energy Astrophysical Phenomena

The Physics of Disk Winds, Jets,and X-ray Variability in GRS 1915+105

Joseph Neilsen (1,2), Julia C. Lee (1,2), Ron Remillard (3) ((1) Harvard University, (2) Harvard-Smithsonian Center for Astrophysics, (3) MIT Kavli Institute for Astrophysics and Space Research)

(Submitted on 26 Oct 2010)

We present new insights about accretion and ejection physics based on joint RXTE/Chandra HETGS studies of rapid X-ray variability in GRS 1915+105. For the first time, with fast phase-resolved spectroscopy of the rho state, we are able to show that changes in the broadband X-ray spectrum (RXTE) on timescales of seconds are associated with measurable changes in absorption lines (Chandra HETGS) from the accretion disk wind. Additionally, we make a direct detection of material evaporating from the radiation-pressure-dominated inner disk. Our X-ray data thus reveal the black hole as it ejects a portion of the inner accretion flow and then drives a wind from the outer disk, all in a bizarre cycle that lasts fewer than 60 seconds but can repeat for weeks. We find that the accretion disk wind may be sufficiently massive to play an active role in GRS 1915+105, not only in quenching the jet on long timescales, but also in possibly producing or facilitating transitions between classes of X-ray variability.

Comments:	3 pages, 1 Figure. Proceedings of IAU Symposium 275 (Jets at all Scales), Buenos Aires, 13-17.09.2010; eds. G. Romero, R. Sunyaev, T. Belloni
Subjects:	**High Energy Astrophysical Phenomena (astro-ph.HE)**
Cite as:	**arXiv:1010.5499v1 [astro-ph.HE]**

Submission history

From: Joseph Neilsen [view email]

[v1] Tue, 26 Oct 2010 20:00:01 GMT (101kb)

Which authors of this paper are endorsers?