Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Detection of pair plasma in recent V404 Cygni flares ROLAND DIEHL, THOMAS SIEGERT, JOCHEN GREINER, MARTIN KRAUSE, Max Planck Institute for extraterrestrial Physics, ANDREI BELOBORODOV, Columbia University, MARION CADOLLE BEL, Max Planck Computing and Data Facility, FABRIZIA GUGLIELMETTI, Max Planck Institute for extraterrestrial Physics, JEROME RODRIGUEZ, CEA/CNRS Univerite Paris Diderot, ANDREW STRONG, XIAOLING ZHANGH, Max Planck Institute for extraterrestrial Physics
— The release of gravitational energy from the accretion of matter onto a black hole still is a mystery. Observationally, the thermal radiadion from an inner accretion disk and its high energy tail are manifestations of processes in the inner region, while the ejection of radio jets demonstrates the energy and plasma outflow on larger scales. Models include materialisation of energy from the central source in the form of pair creation within a region of high density that is opaque to all kinds of radiation. At some point leptons may escape the dense inner regions, and annihilation of positrons in nearby components such as the corona and accretion disk could be expected. Transient line features have been reported from two sources before, and tentatively associated with positron annihilation. Flaring of the microquasar V404 Cygni in June-July 2015 allowed to test this model again. With SPI on INTEGRAL, which has demonstrated excellent measurement capability for positron annihilation in the Galaxy, we now find characteristic signatures of the annihilation of positrons across the 200-1000 keV energy range during this flaring phase. We discuss details of the positron annihilation spectra, and what they might tell us about pair plasma in the central energy source of microquasars.

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Date submitted: 10 Jan 2016 Electronic form version 1.4