Swift observations confirm renewed activity of the transient neutron star X-ray binary Aql X-1

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Swift observations confirm renewed activity of the transient neutron star X-ray binary Aql X-1

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Following reports of the brightening of the optical counterpart of the transient neutron star X-ray binary Aql X-1 between June 3 and 5 (ATel #5114), we observed the source with Swift on June 8.

The XRT was on target for ~0.8 ks in the photon counting mode and for ~0.1 ks in the windowed timing mode. Aql X-1 is clearly detected in these observations. The X-ray spectrum can be described by an absorbed power-law model with a hydrogen column density of \( N_H = (6.1 \pm 1.2) \times 10^{21} \) cm\(^{-2} \) and a photon index of \( 2.0 \pm 0.2 \). The inferred 0.5-10 keV unabsorbed flux is \( F_X \sim 4.9 \times 10^{-10} \) erg/cm\(^2\)/s, which translates into a luminosity of \( L_X \sim 1.5 \times 10^{36} \) erg/s for a distance of 5 kpc. This is about three orders of magnitude higher than the quiescent level of the source.

The UVOT images also reveal a faint object at the source position. During a 0.2 ks exposure using the B filter, Aql X-1 is detected at \( B = 18.91 \pm 0.13 \) mag. During an exposure of similar length taken with the U filter the source is detected at \( U = 19.51 \pm 0.27 \) mag (Vega system). The source is not detected in the UVW1 and UVW2 images, with limits of >19.88 mag and >18.78 mag, respectively.

The Swift observations confirm that Aql X-1 has entered a new accretion outburst.

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