A LONG TERM X-RAY VARIABLE SOURCE @ GROTH-WESTPHAL FIELD

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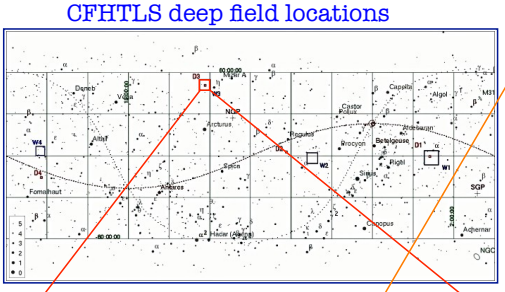
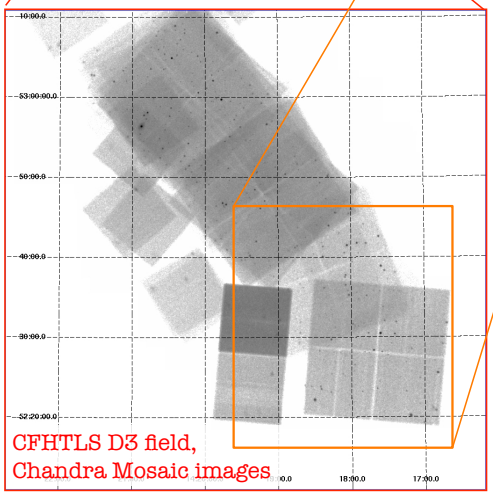
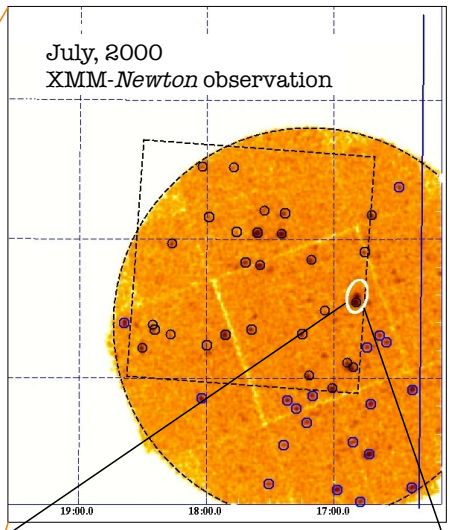
ABSTRACT

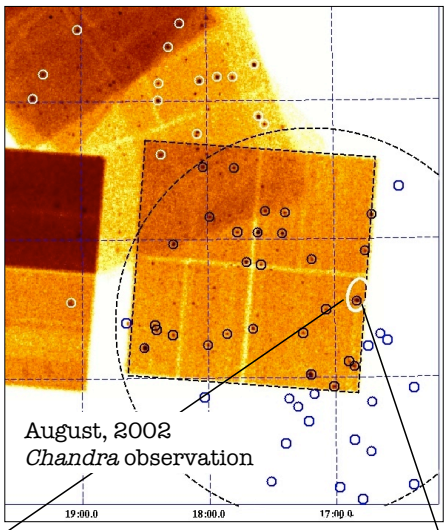
We present the analysis results of an X-ray variable source from The Groth-Westphal Field. J141648.7+522558 and J141649.4+522531 are close X-ray sources with 30 arcsec separation. Both sources have bright elliptical counterparts, as we observed by CFHTLS-D3 optical data. The sources are observed with X-ray observatories of XMM-Newton (on July, 2000) and Chandra (on August, 2002). By comparing the source fluxes at 2 epochs, we found a long term X-ray variable source. The source J141648.7+522558 has a Fx=4.9+/-0.4 E-14 ergs s^{-1} cm^{-2} at first epoch, but not detectable on the second observation by Chandra. While, the nearby source J141649.4+522531 has a consistent flux value of Fx=7.5+/-0.5 E-14 ergs s^{-1} cm^{-2} for 2 years. The intrinsic nature of this flux variability is investigated by considering extremely violent physical processes such as X-ray binaries and AGN.

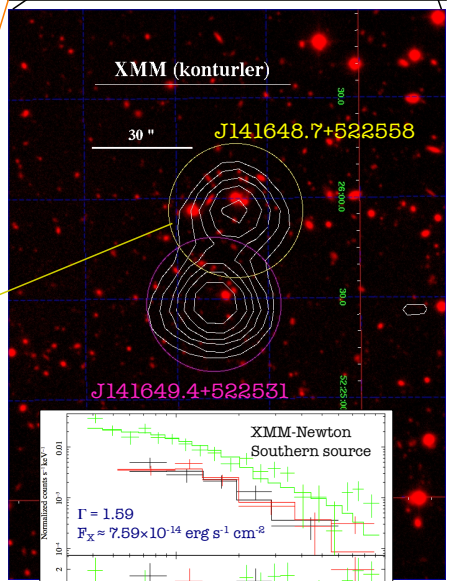
CFHTLS deep field locations

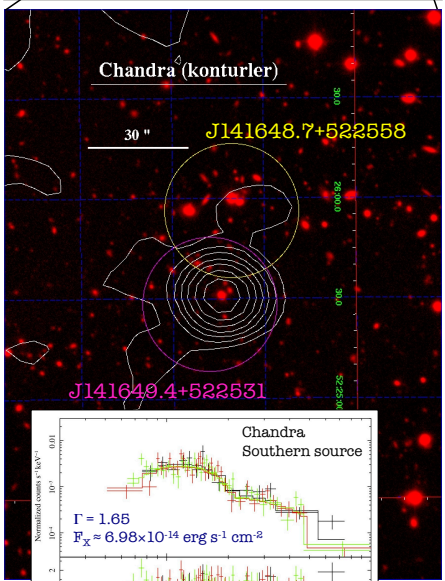


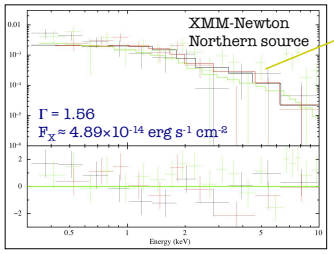












X-ray photon counts from both sources are fitted with non-thermal (power-law) plasma models and photon index and Flux values are estimated.

The X-ray pictures of the same region with 2 year intervals
Notice how the northern source disappears
While the southern source does not change much

J141649.4+522531:

XMM-Newton $\Gamma = 1.59^{1.75}_{1.40}$
$F_X \approx 7.59\times10^{-14}$ erg s^{-1} cm^{-2}

Chandra $\Gamma = 1.65^{1.77}_{1.54}$
$F_X \approx 6.98\times10^{-14}$ erg s^{-1} cm^{-2}

J141648.7+522558:

XMM-Newton $\Gamma = 1.59^{1.75}_{1.36}$
$F_X \approx 4.89\times10^{-14}$ erg s^{-1} cm^{-2}

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