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LYα ABSORBERS DO/NOT CO-ROTATE WITH GALAXY DISKS

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ABSTRACT

We present results of a study comparing the relative velocity of Lyα absorbers to the rotation direction and velocity of nearby galaxy disks. We find...

Subject headings: galaxies:intergalactic medium, galaxies:evolution, galaxies:halos, quasars: absorption lines

To facilitate this decision, we calculate the likelihood, $\mathcal{L}$, of every possible galaxy-absorber pairing as follows:

$$\mathcal{L} = Ae^{-(\frac{\rho}{R_{eff}})^2} e^{-(\frac{\Delta v}{200})^2}. \quad (1)$$

Here ρ is the physical impact parameter, Δv the velocity difference between the absorber and the galaxy ($\Delta v = v_{galaxy} - v_{absorber}$), and A is a factor included to increase the likelihood in the case that $\rho \leq R_{eff}$ (in which case $A = 2$, otherwise $A = 1$).

- First result

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HST (COS)

Target	R.A.	Dec.	z	Program	Grating	Obs ID	Obs Date	T_{exp}* [ks]	S/N* [1238]
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1H0717+714	7.0 21.0 53.3	71.0 20.0 36.0	0.5003	12025	G130M	LBG812	11-12-27	6.0	37

Table 1
COS targets in this sample. *Total exposure time and S/N ratio is given for multi-orbit exposures.

Target	*Galaxy*	R_{vir} [kpc]	v_{galaxy} [km s^{-1}]	*Inc.* [deg]	*Az.* [deg]	ρ [kpc]	$v_{Ly\alpha}$ [km s^{-1}]	$W_{Ly\alpha}$ [km s^{-1}]	Δv [km s^{-1}]	$\mathcal{L}$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1H0717+714	UGC03804	173	2887	55	7	207	2870	343±6	17	0.24

Table 2
All associated systems. The largest $\mathcal{L}$ value is given, with a (*) indicating that this corresponds to $\mathcal{L}_{d^{1.5}}$, otherwise the quoted $\mathcal{L}$ was computed with R_{vir}.

Statistic	Blueshifted Absorbers	Redshifted Absorbers
Number	22	26
Mean EW [mÅ]	329 ± 52	245 ± 34

Table 3
Average properties of the associated galaxy sample split into red and blue-shifted bins based on Δv.