

Observations of Mg II Absorption Near $z \sim 1$ Galaxies Selected From The DEEP2 Redshift Survey

Elizabeth Lovegrove, Robert A. Simcoe

(Submitted on 21 Jul 2011 (v1), last revised 22 Sep 2011 (this version, v2))

We study the frequency of Mg II absorption in the outer haloes of galaxies at $z = 0.6 - 1.4$ (with median $z = 0.87$), using new spectra obtained of ten background quasars with galaxy impact parameters of $b < 100$ kpc. The quasar sightlines were selected from the SDSS DR6 QSO catalog based on proximity to galaxies in the DEEP2 redshift survey. In addition to the 10 small impact systems, we examine 40 additional galaxies at $100 < b < 500$ kpc serendipitously located in the same fields. We detect Mg II absorbers with equivalent width $W_r = 0.15 \text{ \AA} - 1.0 \text{ \AA}$, though not all absorbers correlate with DEEP galaxies. We find five unique absorbers within $\Delta v = 500$ km/s and $b < 100$ kpc of a DEEP galaxy; this small sample contains both early and late type galaxies and has no obvious trends with star formation rate. No Mg II is detected more than 100 kpc from galaxies; inside this radius the covering fraction scales with impact parameter and galaxy luminosity in very similar fashion to samples studied at lower redshift. In all but one case, when Mg II is detected without a spectroscopically confirmed galaxy, there exists a plausible photometric candidate which was excluded because of slit collision or apparent magnitude. We do not detect any strong absorbers with $W_r > 1.0 \text{ \AA}$, consistent with other samples of galaxy-selected Mg II systems. We speculate that Mg II systems with $0.3 < W_r < 1.0$ trace old relic material from galactic outflows and/or the halo assembly process, and that in contrast, systems with large W_r are more likely to reflect the more recent star forming history of their associated galaxies.

Comments: 19 pages, 19 figures, accepted to ApJ; v2 fixed minor errors

Subjects: **Galaxy Astrophysics (astro-ph.GA)**

DOI: [10.1088/0004-637X/740/1/30](https://doi.org/10.1088/0004-637X/740/1/30)

Cite as: [arXiv:1107.4357](https://arxiv.org/abs/1107.4357) [astro-ph.GA]

(or [arXiv:1107.4357v2](https://arxiv.org/abs/1107.4357v2) [astro-ph.GA] for this version)

Submission history

From: Elizabeth Lovegrove [[view email](#)]

[v1] Thu, 21 Jul 2011 19:59:44 GMT (1154kb)

[v2] Thu, 22 Sep 2011 07:12:43 GMT (1154kb)

Which authors of this paper are endorsers?

Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

astro-ph.GA

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[astro-ph](#)

References & Citations

- [INSPIRE HEP](#)
([refers to](#) | [cited by](#))
- [NASA ADS](#)

Bookmark([what is this?](#))

