



# VII Zw 403: HI Structure in a Blue Compact Dwarf Galaxy

Caroline E. Simpson, Deidre A. Hunter, Tyler E. Nordgren, Elias Brinks, Bruce G. Elmegreen, Trisha Ashley, Roger Lynds, Vince J. McIntyre, Earl J. O'Neil, Göran Östlin, David J. Westpfahl, Eric M. Wilcots

(Submitted on 11 Jul 2011)

We present optical (UBVJ), ultraviolet (FUV, NUV), and high resolution atomic hydrogen (HI) observations of the nearby blue compact dwarf (BCD), VII Zw 403. We find that VII Zw 403 has a relatively high HI mass-to-light ratio for a BCD. The rotation velocity is nominally 10-15 km/s, but rises to ~20 km/s after correction for the ~8-10 km/s random motions present in the gas. The velocity field is complex; including a variation in the position angle of the major axis going from the NE to the SW parts of the galaxy. Our high resolution HI maps reveal structure in the central gas, including a large, low-density HI depression or hole between the southern and northern halves of the galaxy, coincident with an unresolved x-ray source. Although interactions have been proposed as the triggering mechanism for the vigorous star formation occurring in BCDs, VII Zw 403 does not seem to have been tidally triggered by an external interaction, as we have found no nearby possible perturbers. It also doesn't appear to fall in the set of galaxies that exhibit a strong central mass density concentration, as its optical scale length is large in comparison to similar systems. However, there are some features that are compatible with an accretion event: optical/HI axis misalignment, a change in position angle of the kinematic axis, and a complex velocity field.

Comments: 62 pages, 19 figures  
Subjects: **Galaxy Astrophysics (astro-ph.GA)**  
Journal reference: 2011, AJ, 142, 82  
DOI: [10.1088/0004-6256/142/3/82](https://doi.org/10.1088/0004-6256/142/3/82)  
Cite as: [arXiv:1107.2049](https://arxiv.org/abs/1107.2049) [astro-ph.GA]  
(or [arXiv:1107.2049v1](https://arxiv.org/abs/1107.2049v1) [astro-ph.GA] for this version)

## Submission history

From: Caroline Simpson [[view email](#)]  
[v1] Mon, 11 Jul 2011 14:53:51 GMT (3577kb)

## 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?](#))



*Which authors of this paper are endorsers?*

Link back to: [arXiv](#), [form interface](#), [contact](#).