

HW4, #1

The Antlia Dwarf Galaxy's CMD is shown in "antlia-cmd-a.png".  
The TRGB appears at

$$m_I \approx 21.7$$

NED gives extinction in this direction as

$$A_I = 0.118$$

So the corrected magnitude of the TRGB is

$$\text{corrected } m_I \approx 21.6$$

Adopting absolute mag of TRGB  $M_I = -4$ , we find

$$(m-M) = 21.6 - (-4) = 25.6$$

And distance

$$d = 10^{0.2 \times [(m-M) + 5]} = 1.32 \text{ Mpc}$$

The red clump appears at

$$m_I \approx 25.5$$

Corrected to

$$\text{corrected } m_I = 25.4$$

In Plevne et al., ApJ 893, 108 (2020), the absolute mag of the red clump is stated to be

$$M_I = +0.25$$

HW 4, #1 continued

and so the red clump yields

$$(m - M) = 25.1$$

and

$$d = 1.06 \text{ Mpc}$$

This doesn't agree terribly well with the TRGB distance.