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Three-dimensional motions in the Sculptor dwarf galaxy as a glimpse of a new era

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Supplementary Information

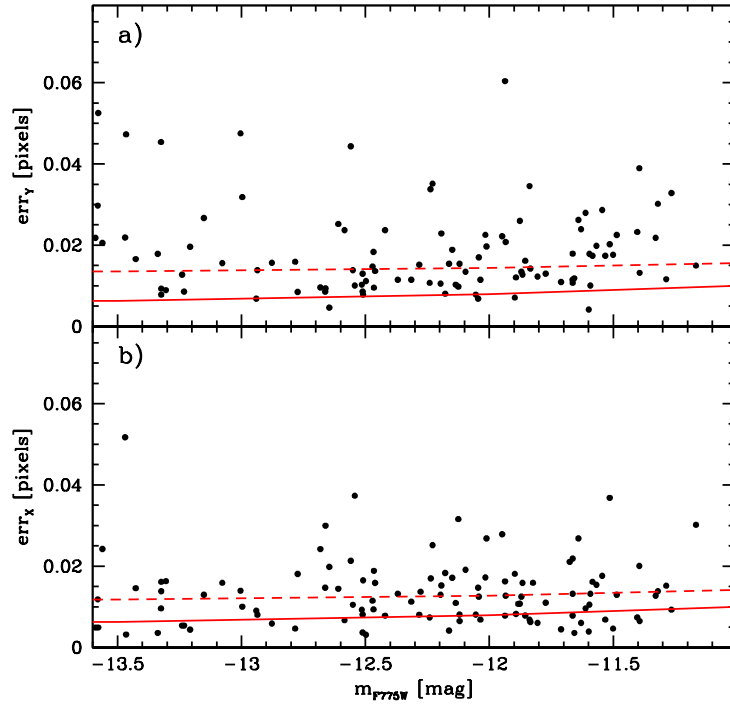


Fig. 1.— **HST internal errors.** Comparison between our estimated single-epoch positional errors and models given by the solid red lines. Our estimate of the errors on the data are systematically above the prediction, and the addition to the model of a 0.01 pixel term (dashed red lines) corresponding to the typical residuals in the geometric distortion solution for the F775W filter leads to better agreement.

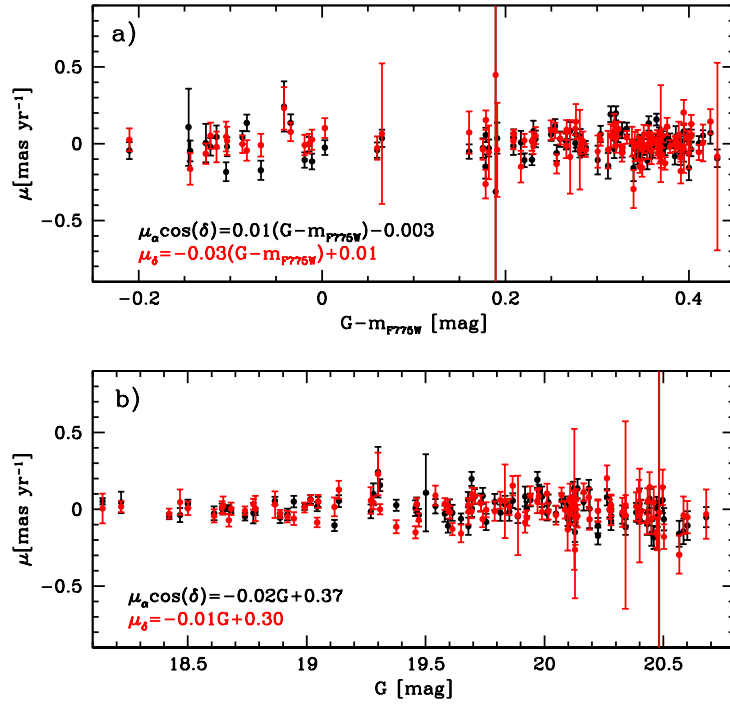


Fig. 2.— **Systematic trends with respect to photometry.** *a*): PMs versus observed ($G-m_{F775W}$) color. 1σ errorbars are also shown. None of the two PM components (black dots describe that along Right Ascension, red dots that along Declination) show any systematic trend. The best linear fit parameters are quoted in the lower-left corner. *b*): same but for the PMs versus *Gaia* G -band magnitudes.

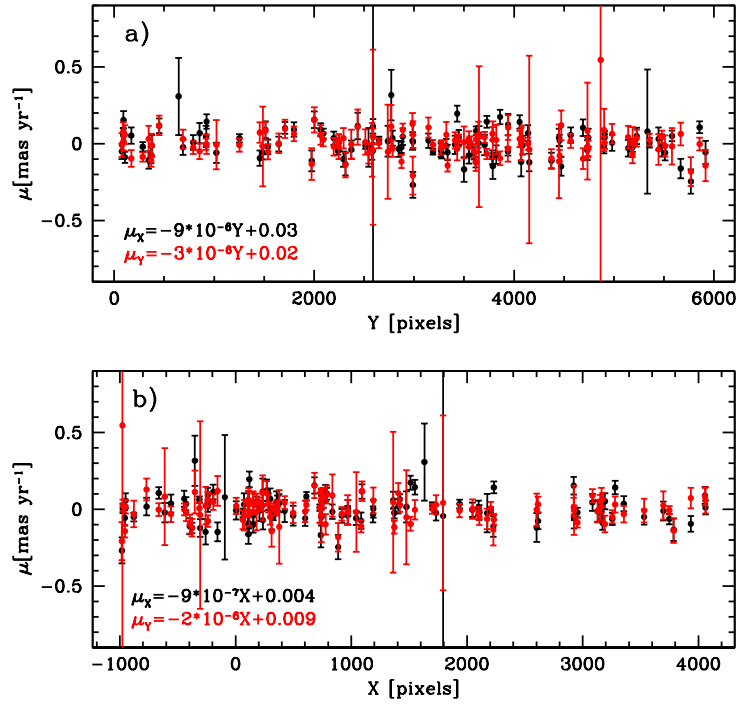


Fig. 3.— **Systematic trends with respect to position.** PM components along the ACS detector Y- (panel a) and X- (panel b) directions versus the position on the detector. Black symbols show PMs (and corresponding 1 σ uncertainty) along the X direction, while red symbols are used for the Y- direction. All the best linear fits are consistent with no systematic trend with location.

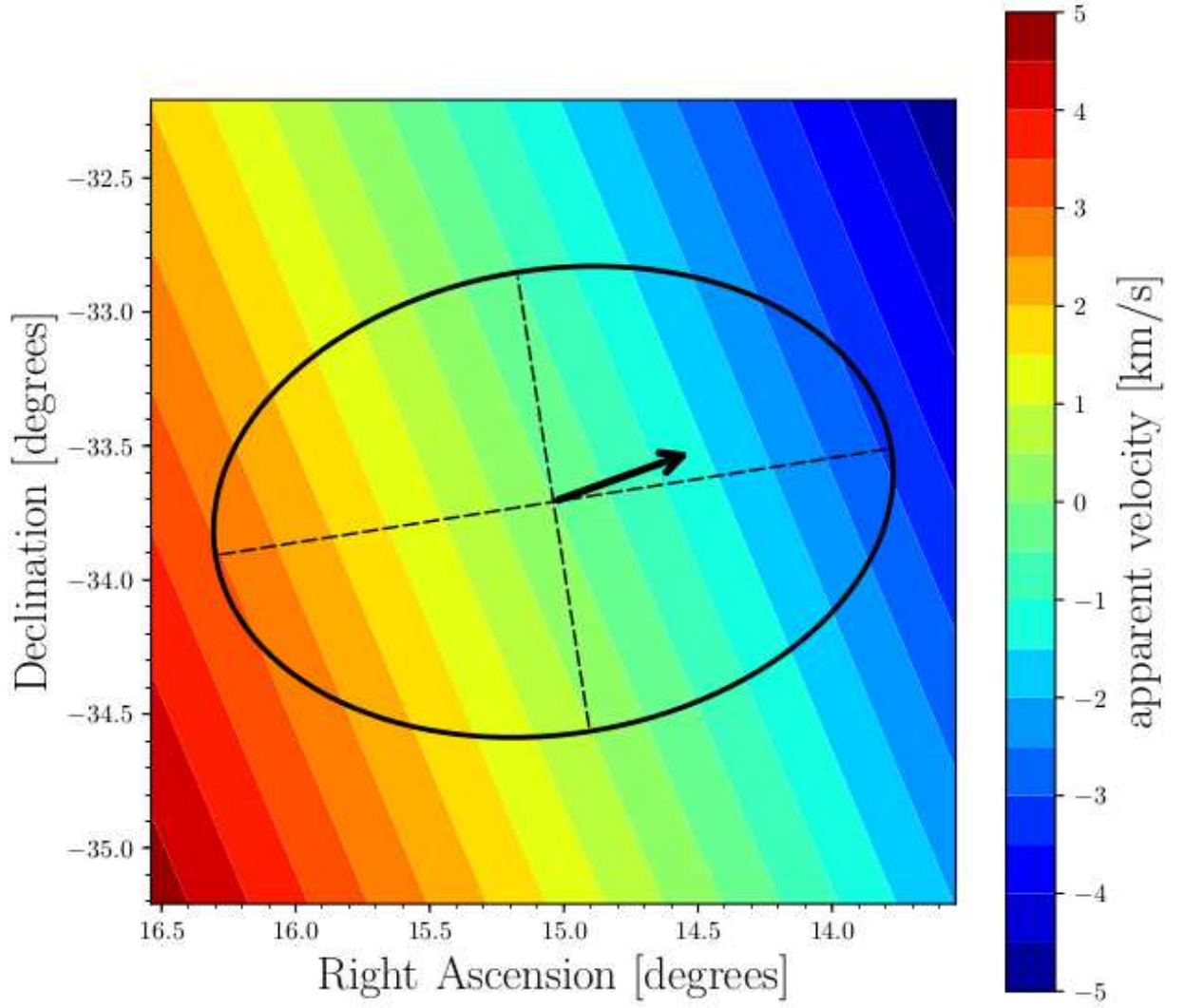


Fig. 4.— **Apparent velocity field induced by the orbital motion of Sculptor.** The black ellipse corresponds to the fiducial tidal radius¹³, the black dashed lines indicate the major and minor axis of the galaxy, while the black arrow gives the projected direction of motion. The color coding represents the apparent velocity field with respect to the Sun in steps of 0.5 km s^{-1} .