



HALOGAS: HI Observations and Modeling of the Nearby Edge-on Spiral Galaxy NGC 4244

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We present 21-cm observations and models of the HI kinematics and distribution of NGC 4244, a nearby edge-on Scd galaxy observed as part of the Westerbork Hydrogen Accretion in LOcal GALaxieS (HALOGAS) survey. Our models give insight into the HI kinematics and distribution with an emphasis on the potential existence of extra-planar gas as well as a negative gradient in rotational velocity with height above the plane of the disk (a lag). Our models yield strong evidence against a significantly extended halo and instead favor a warp component along the line of sight as an explanation for some of the observed thickening of the disk. Based on these models, we detect a lag of $-9 \pm 3 \pm 2 \text{ km s}^{-1} \text{ kpc}^{-1}$ in the approaching half and $-9 \pm 2 \text{ km s}^{-1} \text{ kpc}^{-1}$ in the receding half. This lag decreases in magnitude to $-5 \pm 2 \text{ km s}^{-1} \text{ kpc}^{-1}$ and $-4 \pm 2 \text{ km s}^{-1} \text{ kpc}^{-1}$ near a radius of 10 kpc in the approaching and receding halves respectively. Additionally, we detect several distinct morphological and kinematic features including a shell that is probably driven by star formation within the disk.

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