

INTERSTELLAR CIRRUS OBSERVED IN BALMER H α

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1. Introduction

We present H α images with 0.1° resolution and fields of view larger than 10°. In some regions of the sky, the Balmer H α emission is correlated positively with IRAS 100 μm emission. Observations of such sensitivity and angular scale as these provide a new view of the interstellar medium of our Galaxy (see also Dennison *et al.*, this volume, p. 182) and may allow us to distinguish between Galactic foreground and cosmic background for both the free-free emission and the thermal dust emission associated with the warm ionized medium of the Milky Way.

2. Results

In one field at galactic latitude -65° (McCullough 1997), the sensitivity is limited in part by confusion: the anisotropy of the H α surface brightness is ~ 0.2 Rayleighs peak-to-valley, typically, which corresponds to an emission measure of $\sim 0.5 \text{ cm}^{-6}\text{-pc}$ or an R magnitude of 32.7 per square arc second.

In this paper we present a mosaic centered on M31, which is the over-exposed ellipse in the center. By blinking the H α image with IRAS images made with SkyView (skyview.gsfc.nasa.gov), we notice that some objects are visible both in H α and in the infrared, at 60 and 100 μm . (There are also objects visible in H α but not in the infrared, and vice versa.) In the particular case below, the objects common to the infrared and H α images are a few arcuate filaments, all with the intriguing property of being concave (not convex) as viewed from the Galactic plane, which is 15° above the top of the images below. The arcs have radii of curvature of 5° to 10° . They are unremarkable in the confusion of the IRAS images viewed alone but are seen clearly by blinking with the H α image. Presumably they are shells of gas and dust expanding away from the Galactic plane.

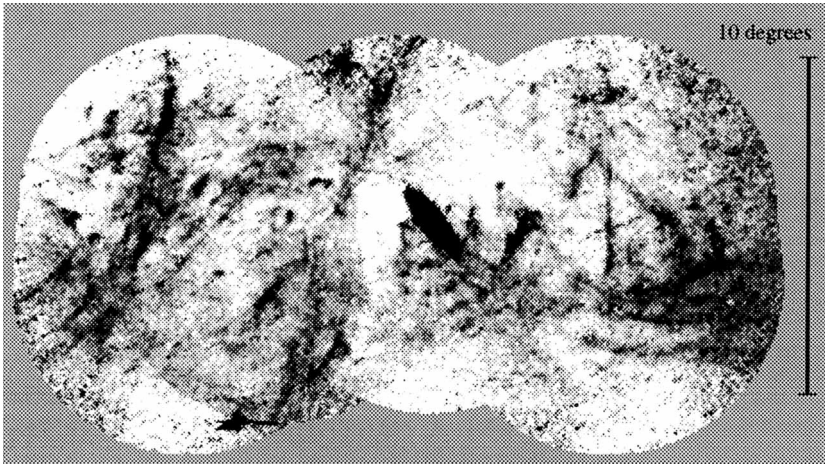


Figure 1. This H α image is centered on 0h45m +41° [2000], (l,b) = (121°6, -21°8). It may be compared with the infrared image below. The filaments have surface brightnesses of ~ 1 Rayleigh.



Figure 2. This IRAS 100 μ m image is of the same region as the H α image above.

Acknowledgements

We are pleased to acknowledge the creators of SkyView, a service that reduces the tedium of overlaying images.

References

McCullough 1997, Astron.J. submitted.