DIFFUSE OVI EMISSION TOWARDS THE LOOP I SUPERBUBBLE

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Abstract

The Loop I superbubble is believed to have been blown by stellar winds and supernovae in the Sco-Cen OB association. Diffuse OVI emission is expected due to the hot gas inside the superbubble. Our current experiment utilizes the Far Ultraviolet Spectroscopic Explorer (FUSE) satellite for two adjacent pointing directions towards the Loop I superbubble which differ in soft X-ray flux by a factor of ~ 2. In the direction with lower soft X-ray flux, the distant OVI emission will be shadowed in the same way as the X-rays. Combining these two measurements will therefore allow us to study the conditions of the OVI-emitting gas within the superbubble. Preliminary results will be presented.

A large ring-shaped H I structure has been interpreted as an interaction zone between the Loop I superbubble and the Local Bubble, and also appears as an annular shadow in the ROSAT 1/4 keV maps. Our experiment will observe O VI emission along two lines of sight along this "interaction zone". The "Shadowed" sightline intersects the dense neutral annulus. The "Unshadowed" sightline does not intersect the interaction zone annulus, and therefore contains emission from within the Loop I superbubble.

Data for the "Unshadowed" sightline is not yet available. Data for the "Shadowed" sightline yields a 1032 Å OVI emission intensity of 2980 ± 500 LU, which is similar to that found for several other directions.

The emission may have contributions from 4 different regions: **The Local Bubble** - but Shelton (2003) sees little or no emission inside the LB in another direction. **The Interaction Zone** - lies at a distance of ~ 70 pc (Egger & Aschenbach 1995; EA95). **Inside the Loop I superbubble** and beyond Interaction Zone - Since $N_H \sim 7 \times 10^{20}$ cm^{-2} (EA95) for stars just beyond this annulus, the intrinsic intensity would be ~ 7 times the observed intensities. **The Galactic Halo** - Total column density in this direction is $N_H \sim 1.4 \times 10^{21}$ cm^{-2}. Upcoming data from the "Unshadowed" sightline will clarify the situation.