

Diffuse Ionized Gas in the Milky Way and the Magellanic System: Early Results from WHAM-South

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The Wisconsin H-Alpha Mapper (WHAM) is providing the first kinematic, all-sky survey of diffuse H-alpha from the Milky Way. Aside from many large-scale, locally-ionized regions, much of this emission arises from the Warm Ionized Medium (WIM), a diffuse but thick component of the ISM that extends several kiloparsecs into the Galactic halo. I will present our early efforts reducing this new southern dataset and offer a first look at the global distribution and kinematics of diffuse ionized gas throughout the Galaxy. Multiwavelength surveys (of [S II] and [N II], in particular) are in progress to map the physical conditions of this ionized component as well. From its new vantage point at Cerro Tololo in Chile, WHAM is also poised to explore diffuse plasma in extended gaseous structures near our close galactic neighbors, the Magellanic Clouds. Shaped by the interaction between the Clouds and the Milky Way, extended gas complexes called the Bridge, Stream, and Leading Arm have been studied extensively in 21 cm emission and optical/UV absorption. With spectral resolution of 12 km/s, WHAM is able to isolate optical emission from these structures. Combined with its unprecedented sensitivity, we are also embarking on the first survey of the ionized component of the Magellanic System.