Dhaneshva Krishnarao

**Award:** WSGC Graduate and Professional Research Fellowship; $5000.00

**Status:** Ph.D., Astronomy

**Advisor:** L. Matthew Haffner

**Research Topic:** Extragalactic Study of Ionized Gas Extending from Milky Way Knowledge

**Abstract:** (First Paragraph of Proposal) Disk galaxies are made up of layers - from cold dense molecular gas and dust in the disk to diffuse neutral and ionized gas in the halo. However, these layers interact through a complex disk-halo interplay that determines the flow of matter and energy throughout a galaxy and influences its evolution. Star formation, supernovae, and other mechanisms in the disk drive gas into the halo. In return, the height of this halo gas determines the gravitational pressure experienced in the disk, directly affecting molecular clouds and star formation. Over this past year, I analyzed and submitted a first-author paper on the vertical structure of ionized halo gas in our Galaxy to disentangle a piece of this complex disk-halo puzzle (Krishnarao et al. 2017). But to build an in-depth understanding of the ionized gas in disk galaxies, I must expand our knowledge of the Milky Way to a large sample of galaxies. I can then run a statistical ensemble of tests to understand the physics driving the gas of galaxies, rather than relying on a single sample.

**Biography:** Dhanesh (DK) is a graduate student at UW-Madison interested in the properties and  
interactions between the disk and halo of galaxies – particularly the Milky Way. He  
uses a unique and powerful telescope called WHAM, the Wisconsin H-Alpha Mapper,  
to study diffuse ionized gas that is seen throughout disk galaxies and disentangle the  
structure of the interstellar medium (ISM). Before coming to Wisconsin, DK studied  
math and physics at American University in Washington, DC, where he investigated  
the properties of interstellar dust and its effects on the ISM. He also worked at NASA Goddard Space Flight Center as an official Space Weather Forecaster, providing real-  
time alerts and analysis of space weather events to NASA mission operators, the Air Force, and other private sector satellite operators.

**Congressional District:** 2

**Congressional Representative:** Mark Pocan