Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Measuring Magnetic Fields in Photoionized Interstellar Plasmas (HII Regions)[1] STEVEN SPANGLER, ALLISON COSTA, University of Iowa — Hot luminous stars photoionize the interstellar gas around them, creating plasmas with a very high ionization fraction. In astronomical terminology, these are called HII regions. They are dynamic plasmas, expanding due to overpressure with respect to the interstellar medium. We are making diagnostic measurements to determine the strength and structure of magnetic fields in these objects. This paper presents our results on the Rosette Nebula. We diagnose the magnetic field in the Rosette by measurements of Faraday rotation on lines of sight passing through the nebula. These measurements are made with the Very Large Array radio telescope of the National Radio Astronomy Observatory. We have measurements of the rotation measure for 18 lines of sight. Values of the mean, line of sight component of the magnetic field range from about 3 to 5 microGauss. We will discuss comparison of these measurements with models for modification of the interstellar magnetic field by an HII region.

[1]This work was supported by grants AST09-07911 and ATM09-56901 from the National Science Foundation.

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Date submitted: 17 Jul 2015 Electronic form version 1.4