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Emission Line Science in the Faint Infrared Grism Survey (FIGS) Sample MARK SMITH, SANGEETA MALHOTRA, JAMES RHOADS, JOHN PHARO, School of Earth and Space Exploration, ASU, FIGS TEAM — Emission lines can reveal a bounty of information about the processes occurring within a galaxy. Physical properties such as star formation rate and metallicity can be determined from ratios of emission line fluxes. The study of emission line galaxies (ELGs) through cosmic time gives insight into the processes by which galaxies evolve. Extreme emission line galaxies (EELGs), typified by strong nebular emission lines which dominate their spectra, are of interest because they are well known to be galaxies undergoing periods of intense star formation. Slitless spectroscopy offers a significant advantage to the study of ELGs and EELGs, allowing for measurement of the spectra of a large number of galaxies within a field. This allows for detection of ELGs and EELGs with few selection biases, and analysis of the emission lines present without the need for time-consuming individual follow-up. In this talk I will introduce the physics governing the two types of nebular emission lines, recombination lines and forbidden lines, and describe the environments in which these emission lines are generated. I will discuss the methods used to identify and analyze ELGs in FIGS and what has been learned so far. I will also explore applications to the Wide Field InfraRed Survey Telescope (WFIRST).

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