

FIFI-LS OBSERVATIONS OF GALACTIC PDRs

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Photo-dissociation regions or photon-dominated regions (PDRs) are the interfaces between ionized HII-regions and adjacent molecular clouds usually found in massive star-forming regions. As the places where molecular clouds are destroyed by the UV radiation of the forming massive stars, they are the regions where the effects of star formation on the interstellar medium and the energetics and physical properties of the feedback can be best studied.

FIFI-LS, SOFIA's far-infrared (FIR) spectrometer, is well suited to observe galactic PDRs and study them in great detail. The bulk of the energy from PDRs is emitted in the wavelength range of *FIFI-LS*, which ranges from 50 to 200 μm . In this wavelength range, there are many strong atomic and ionic fine-structure lines, which can serve as diagnostic tools to trace these species and to determine densities and temperatures of the ionized and neutral medium in PDRs. *FIFI-LS's* ability to map large bright regions quickly and in two transitions simultaneously allows researchers to analyse the varying conditions in star-forming regions comprehensively.

We will show first results of *FIFI-LS* observations of M42 and M17. M42 with the Orion Bar, a well-known PDR seen edge-on was one of the very first objects observed with *FIFI-LS*. Subsequently, we have observed M42 in a growing number of transitions. We also have observed the PDR in M17 in several transitions. The PDRs are clearly identified by the complementary spatial extent of the ionized and neutral species. From the ratios of the [OI] (63 and 146 μm) and [OIII] (52 and 88 μm) line pairs, the [CII] (158 μm) line and combinations thereof, physical conditions in the different phases and the transition regions can be derived. We are presenting preliminary results. Rigorous modeling of the observed PDRs will follow.