The SFACT Survey – Metallicities with Cloudy
by David Carr

The SFACT Survey

- Designed to find emission line galaxies across a wide redshift range

How is Cloudy involved

- Construct a grid of AGN models that match the KISS sample
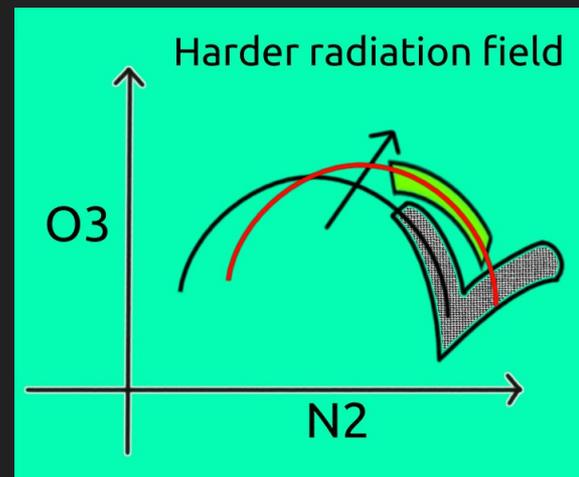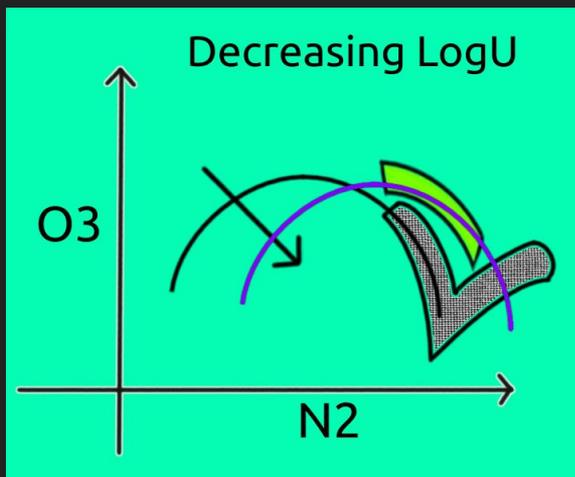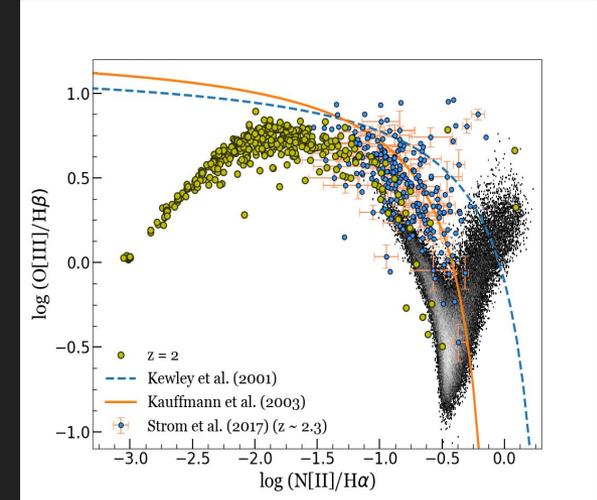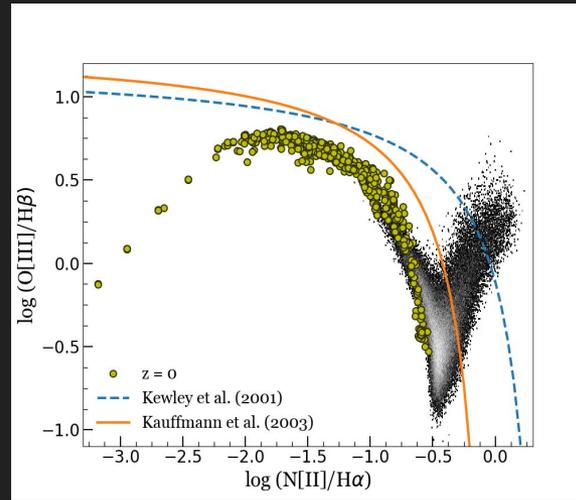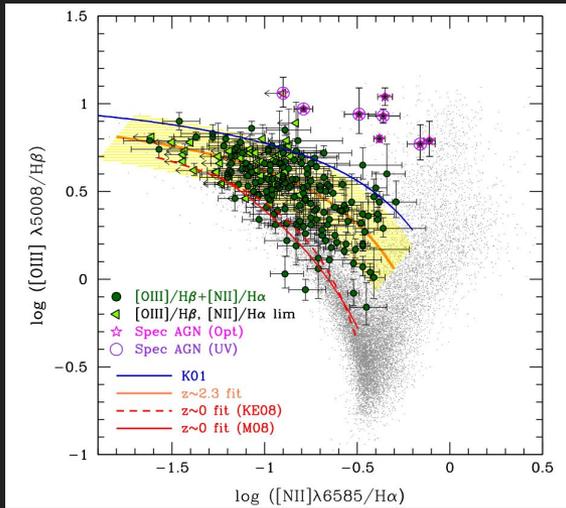- Vary that grid with metallicity

What I need to do

- I must figure out how to accurately model an AGN to fit the upper right part of the sample
- I need to vary the final grid's metallicity and see how it affects its position on the graph
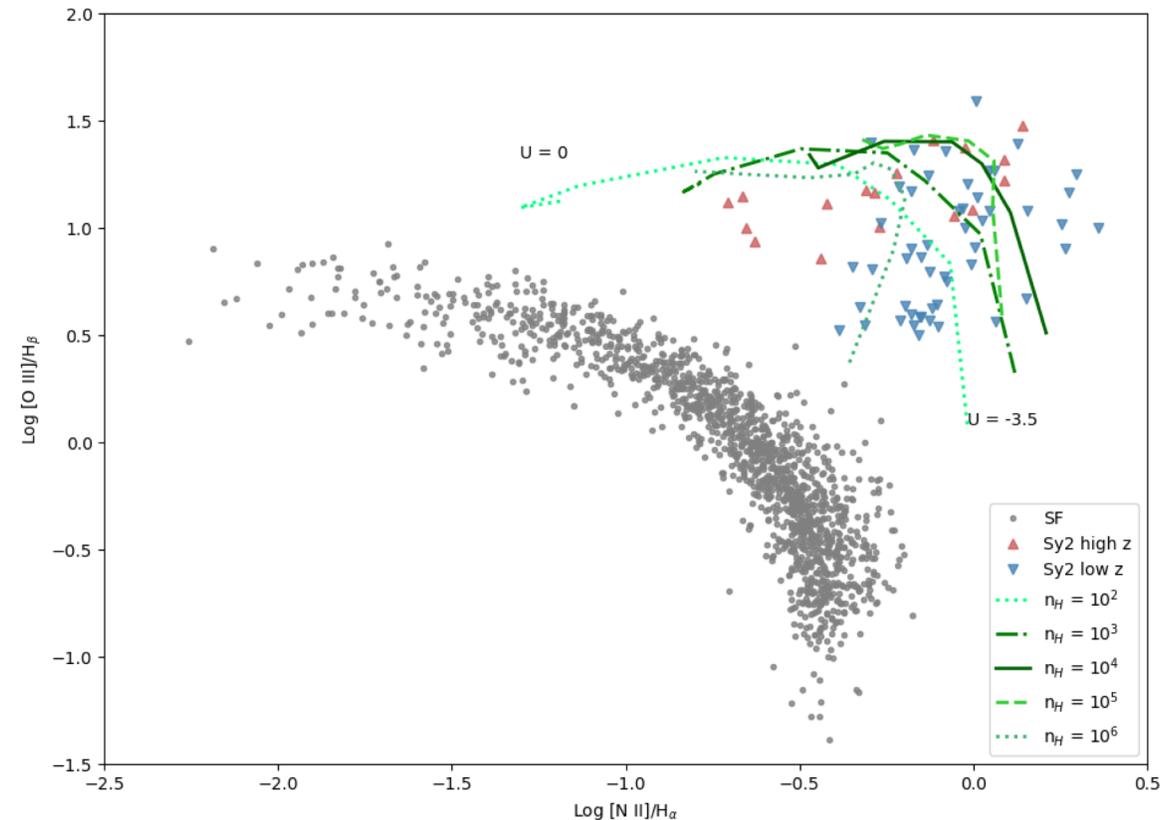
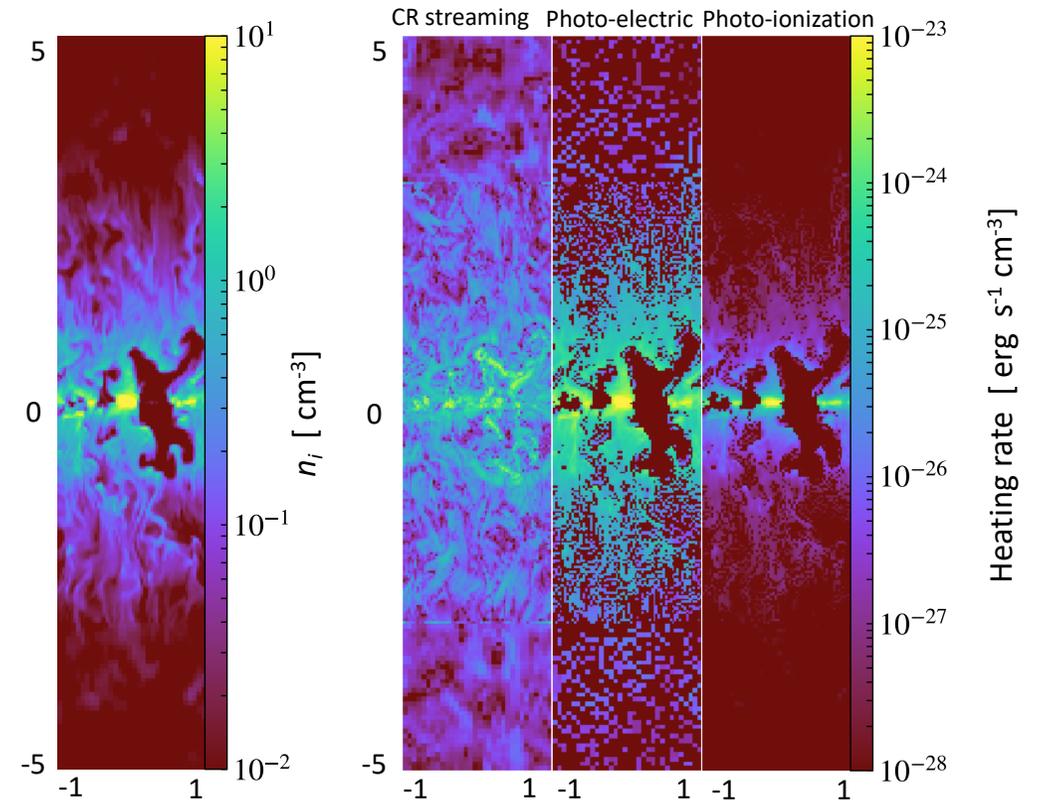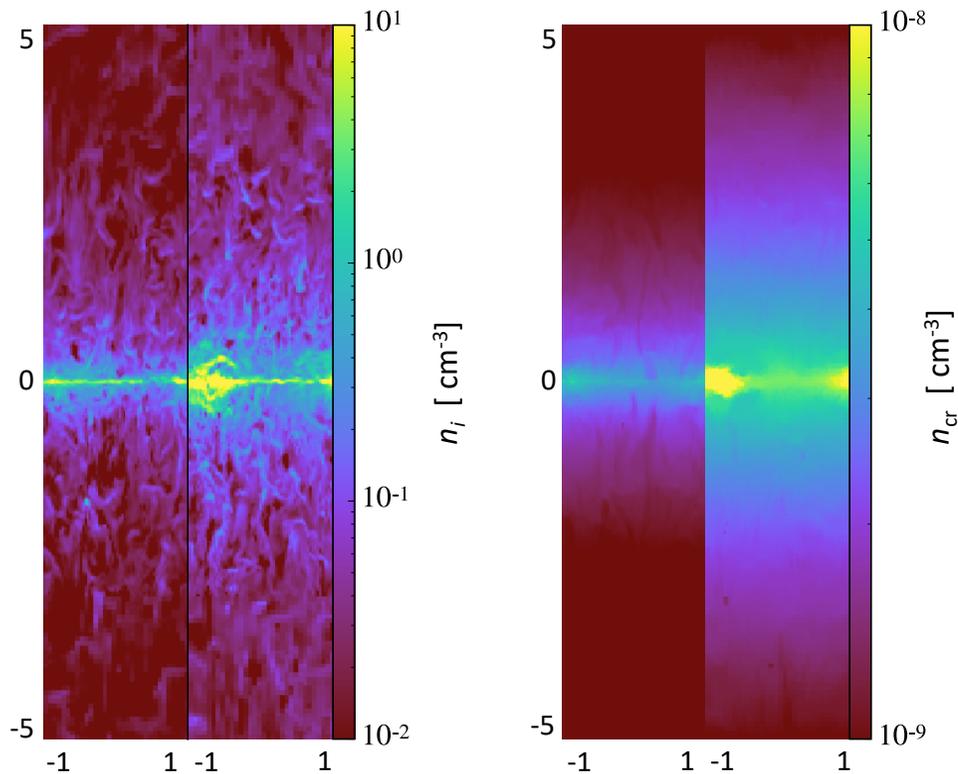# Understanding the BPT diagram offset at high Z

Prerak Garg

Effect of cosmic rays on dynamical and thermal state of galaxy
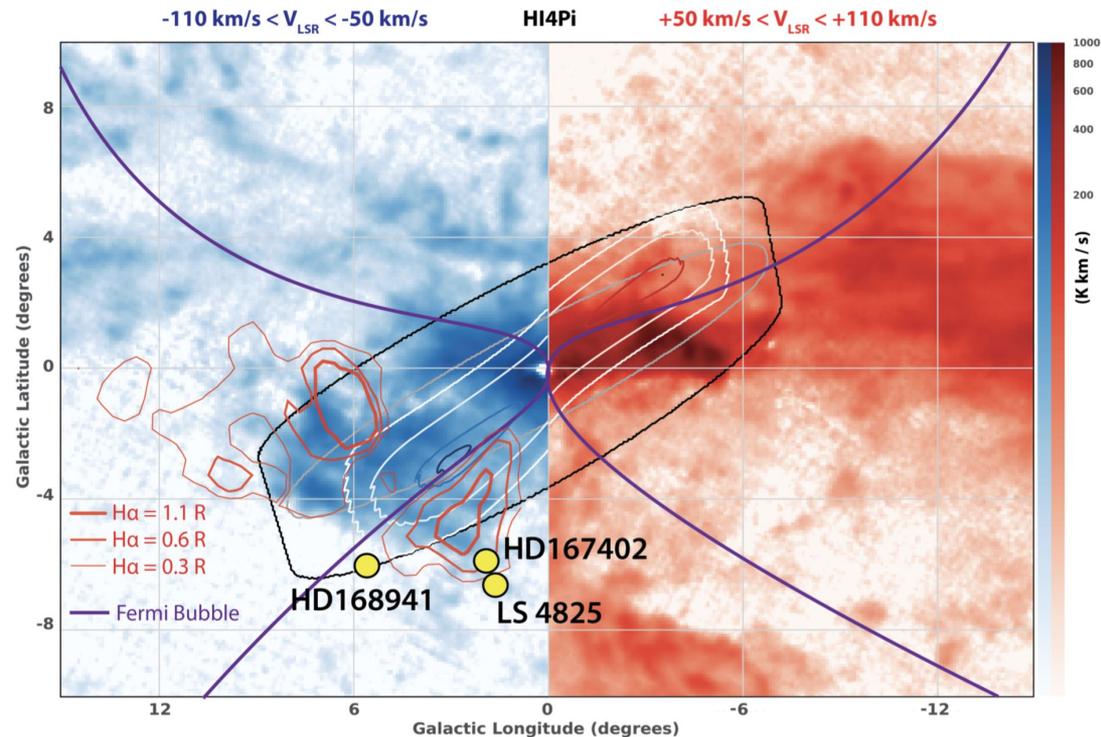
Paco Holguin

Turbulence → Faster CR transport → Enhanced stellar feedback

CR and radiation heating of the circumgalactic medium

LI(N)ERs Close to Home:
Ionized Gas in the Milky Way

-110 km/s < V_LSR < -50 km/s   HI4Pi   +50 km/s < V_LSR < +110 km/s

DK (Dhanesh Krishnarao)

- A "convenient" gas distribution lets us put the Inner Milky Way on a BPT Diagram - Largely LI(N)ER like

- HST, FUSE, and IUE sightlines identified; Optical Emission observed with WHAM

- Requires 5-10% of ionizing photons from CMZ

- Or 10x the local ionizing flux

Milky Way allows us to resolve ionizing sources and study LI(N)ER gas with absorption lines for the first time!

The Physical Conditions in the Star-Forming Low Metallicity Interstellar Medium

Elizabeth Tarantino, University of Maryland

SMC N22 Spectra
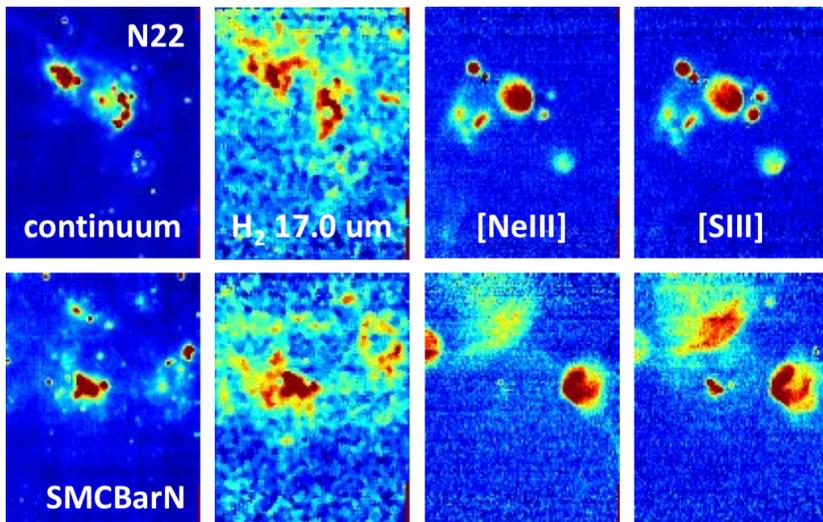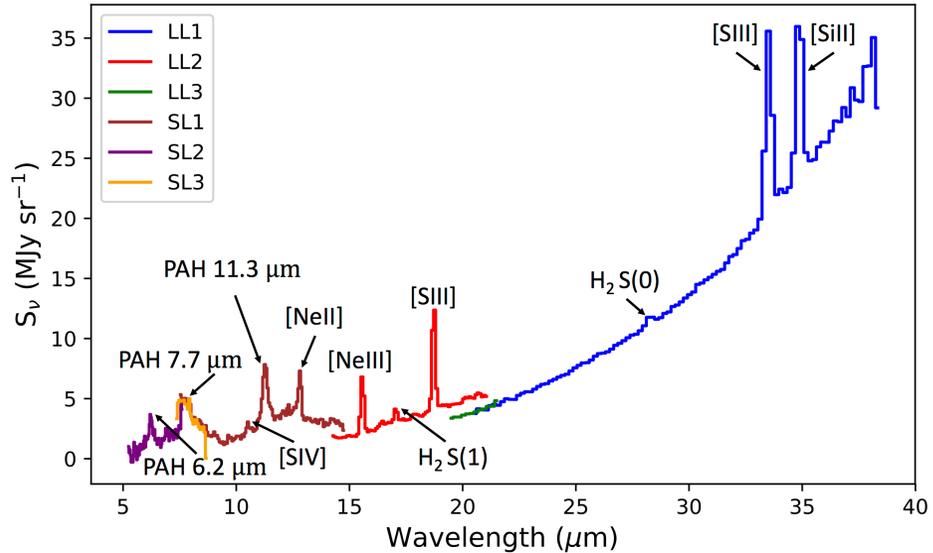
- What are the conditions of the HII regions in the SMC?

- What is the interplay between the interstellar radiation field and the cooling in the atomic and molecular media at low metallicities? ($Z_{SMC} \sim Z_\odot/5$)

- What are the characteristics of the interface between the HII region and the molecular reservoir in metal-poor star forming systems?

We hope to use Cloudy to:
➢ Model the near and far infrared ionized lines
➢ Find the ionizing radiation field strength and hardness, ionization parameter, density of ionized gas, temperature, incident radiation field, and cooling efficiency in PDRs/neutral gas