My name is ZhongXing Hu, a senior student who are majoring in Physics and Astronomy at University of Illinois at Urbana Champaign. I am writing to express my interest in this Undergraduate Research Program at UC Berkeley. My experience aligns well, as I have partaken in two types of research, and I believe that I would make a valuable contribution to Berkeley SETI Research team.

My interest in this program is what we can do and how we can prove that extraterrestrial intelligence exists. It is also my personal interest in the universe. Therefore, the research I have participated in are related to evolution of galaxies, stars and planets. We have to know how stars and planets form in order to determine whether extraterrestrial intelligence is existed. For lives to survive, energy(stars) and stable accommodation(planets) are two of the important elements. Thus, research on the evolution of galaxies, stars and planets are one of the best ways to approach extraterrestrial intelligence.

The first research is about “Structure and dynamics of the interstellar medium (ISM) in galaxies”. By pointing the telescope to the sky, we can scan and get the CO data of the galaxies. The CO is the best tracer of the molecular hydrogen which is so common in the universe. By analysing the CO data of the galaxies, we can know the movement of the molecular hydrogen gas. If we gain data of specific galaxies for a long time, we can get the dynamic of the gas inside the galaxies and learning the evolution of star. I was asked to plot the max noise and mean signal-to-noise for 20 galaxies. First, I used terminal (Linux) to create calibrated files for each galaxy and run servals command to let the data enter their own calibrated files in Alma-data. My supervisor collected all the calibrated files and upload to the Jupyter Notebook. Two python codes which is “ACAmoment” and “Plotall” are sent to me to deal with the data I got in Alma-data. “ACAmoment” was used to extract the data and “Plotall” was used to plot the noise and mean signal to noise to a graph. At the end, I have to compare current data with past data to see whether there will be a big chance in the same galaxy.

The second research that I am doing is about “Early Planet Formation in Embedded Disks”. This purpose of this project is to find the early Planets formation in disks of young protostars especially for class 0 and class I protostars. Since the gaps in the class 0 and class I protostars are not obvious, the data need to be processed in order to get the information of protostar disk. I was given a python model “frank” which can reveal the disk in one dimension. After rotating the data in one dimension, we can get the approximate image of the disk to evaluate the hidden gaps in the class 0 and class I protostars.

Please review my resume and transcript for a deeper look at my academic and research performance. I look forward to being involved in this Undergraduate Research Program.

Thank You for your time and consideration.