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Previous studies with the precursors to CARMA, BIMA and OVRO, have long been the leaders in the studies of protoplanetary disk chemistry. Among the many observations taken include observations of the CO, CN, HCN and HCO+ around the T Tauri star LkCa (Qi et al. 2003) which found differences in the extent and mass of the disk as compared with dust observations. By directly observing these molecules in planet-forming environments around young stars we are better able to characterize the initial conditions for planet formation. This molecular line emission also serves as good tracers of the temperature and radiation fields in the surface layers of these protoplanetary disks.

Currently, I am working on creating a model of the chemical evolution of protoplanetary disks before the start of planet formation. My model predicts the abundances of numerous molecules that are present in the disk and, as a result, should serve as a good companion to molecular observations made of these disks. As one of the scientific motivations for CARMA was to "constrain planetary formation scenarios through surveys of the ... chemical structure within disk analogs of the early solar nebula", my theoretical models will help to understand observations that are made as well as to serve as a guide for which molecules we should be looking for.

While my thesis is almost completely theoretical, I feel it is important for me to both learn and understand more about how molecular observations are being made. This would help me twofold. First, I would have a better understanding of what sort of information and results are needed so that observers would be able to test the results of my model. Second, I would be able to make these observations myself so that I would not have to rely on someone else in order to test my theories. As I have no previous experience with mm wave observations, I feel that attending the CARMA summer school this June will be greatly beneficial to my future as an astronomer.

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