

Laura Fissel (NRAO CV)

## Do Magnetic Fields Shape Molecular Cloud Formation?

Molecular clouds form out of a turbulent and highly magnetized ISM. It is natural therefore to ask what role the magnetic field plays in determining both how quickly such clouds form, and also the resulting morphology and subsequent evolution of the cloud sub-structure. In this talk I will present results of statistical comparisons between the orientation of the magnetic field in the Vela C giant molecular cloud (as traced by the BLASTPol balloon-borne sub-mm polarimeter) relative to the orientation of cloud sub-structures (as traced by gradient of column density and molecular line emission maps). We find that the highest column density cloud structures are preferentially aligned perpendicular to the cloud magnetic field, suggesting that the magnetic field played an important role in gathering the gas that would eventually form the cloud. However, we also find early indications that this orthogonal alignment relative to the magnetic field may not extend down to core/clump ( $<0.05\text{pc}$ ) scales. With the upcoming flight of a new and improved BLAST polarimeter in late 2017, we will soon be able to use this same technique to study the role of magnetic fields in cloud formation for dozens of molecular clouds.