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## Understanding the role of magnetic fields in a giant molecular cloud

The role of magnetic fields in star formation remains one of the great as yet unsolved mysteries in understanding the process of star formation. In this talk I will discuss what we can learn about magnetic fields in the giant molecular cloud Vela C by studying the correlation between large scale molecular line surveys and surveys of magnetic field orientation from the balloon-borne telescope BLASTPol. By comparing gradients in intensity we find that the large scale cloud magnetic field must be at least as strong as turbulence. Further we find that local velocity gradients, both in thin channel maps and velocity centroid maps, show a strong correlation with the magnetic field orientation traced by BLASTPol and seems to indicate that BLASTPol is sensitive to the magnetic field direction of not just the low density outer envelope of the cloud but also intermediate to high density gas associated with the dense cloud ridges.