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MAGMO: Mapping the Galactic Magnetic field through OH masers

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Abstract. We are undertaking a project (MAGMO) to examine large-scale magnetic fields pervading regions of high-mass star formation. The project will test if the orientations of weak large-scale magnetic fields can be maintained in the contraction (and field amplification) to the high densities encountered in high-mass star forming regions. This will be achieved through correlating targeted observations of ground-state hydroxyl (OH) maser emission towards hundreds of sites of high-mass star formation spread throughout the spiral arms of the Milky Way. Through the Zeeman splitting of the OH maser emission these observations will determine the strength and orientation of the in-situ magnetic field. The completion of the southern hemisphere Methanol Multibeam survey has provided an abundance of targets for ground-state OH maser observations, approximately 1000 sites of high-mass star formation. With this sample, much larger and more homogeneous than previously available, we will have the statistics necessary to outweigh random fluctuations and observe an underlying Galactic magnetic field if it exists. We presented details of the overall progress of the project illustrated by the results of a pilot sample of sources towards the Carina-Sagittarius spiral arm tangent, where a coherent field is implied.

Keywords. masers, stars: formation, ISM: magnetic fields, Galaxy: structure

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We described the completion of the southern hemisphere observations with the Australia Telescope Compact Array utilising the Compact Array Broadband Backend to observe all four ground-state transitions of hydroxyl maser emission towards sites of high-mass star formation, as signposted by 6.7-GHz methanol masers from the Methanol Multibeam (MMB) survey (Green *et al.* 2009, Caswell *et al.* 2010). We presented the results of the pilot observations towards the Carina-Sagittarius spiral arm tangent, where a coherent field is seen across six sites of high-mass star formation (Green *et al.* 2012).

References

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