

OH masers and magnetic fields in massive star-forming regions: ON1

S. Nammahachak¹, K. Asanok¹, B. Hutawarakorn Kramer^{2†},
R. J. Cohen³, O. Muanwong¹ and N. Gasiprong⁴

¹Department of Physics, Faculty of Science, Khon Kaen University,
Khon Kaen 40002 Thailand

²National Astronomical Research Institute of Thailand, Physics Building,
Chiang Mai University, Chang Mai 50200 Thailand

³University of Manchester, Jodrell Bank Observatory, Cheshire SK11 9DL United Kingdom

⁴Department of Physics, Faculty of Science, Ubon Rajathanee University,
Ubon Rajathanee 34190 Thailand

Abstract. OH masers are sensitive probes of the kinematics and physical conditions, and give unique information on the magnetic field through their polarization. Zeeman splitting of the OH lines can give the magnetic field strength and direction. Observing OH masers with MERLIN we studied the bipolar outflow in the star-forming region ON1, which hosts one of the earliest known ultra-compact (UC) HII regions. The strongest masers lie near the southern edge of the UCHII region in an elongated distribution. The maser distribution is orthogonal to the bipolar outflow seen in HCO⁺, suggesting that the OH masers may be embedded in a molecular disk or torus around a young B0.3 star, most likely tracing a shock front. An isolated group of 1720-MHz masers is also seen to the East. The magnetic field deduced from Zeeman splitting of the OH maser lines shows a large-scale order, with field values ranging from -0.4 to -4.6 mG. These results add to the growing body of evidence for OH masers associated with molecular disks or tori at the centre of bipolar outflow from massive young stars, and for a significant role played by the magnetic field in generating or channeling the bipolar outflow. Further details are presented by Nammahachak *et al.* 2006.

Keywords. Masers, star-formation, OH masers, magnetic field, ON1, Onsala 1

Reference

Nammahachak, S., Asanok, K., Hutawarakorn Kramer, B., Cohen, R. J., Muanwong, O., & Gasiprong, N. 2006, *MNRAS* 371, 619

† Contact: rjc@jb.man.ac.uk, busaba@nari.or.th