

Detection of rotational CO emission from the red-supergiants in the Large Magellanic Cloud

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Abstract. It is yet well understood how mass-loss rates from evolved stars depend on metallicities. With a half of the solar metallicity and the distance of only 50 kpc, the evolved stars of the Large Magellanic Cloud (LMC) are an ideal target for studying mass loss at low metallicity. We have obtained spectra of red-supergiants in the LMC, using the Hershel Space Observatory, detecting CO thermal lines from $J=6-5$ up to $15-14$ lines. Modelling CO lines with non-LTE Radiative transfer code suggests that CO lines intensities can be well explained with high gas-to-dust ratio, with no obvious reduction in mass-loss rate at the LMC. We conclude that the luminosities of the stars are primary factors on mass-loss rates, rather than the metallicity.

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