The origin of CII emission in the Large Magellanic Cloud

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We compare the distribution of HI 21cm, HII 6563 AA, and CII 157.7 micron m line emission over the entire Large Magellanic Cloud (LMC). Bright CII emission is associated with HII regions and their surroundings, with a good correlation between CII and Halpha filaments. Diffuse CII emission is also detected in regions with no HII emission. We found a reasonably good correlation between the extended CII emission and HI emission. The CII emission per unit HI column density from the atomic regions of the LMC is similar to, but somewhat higher than, that in the Milky Way, due to cancelling effect of lower C abundance and higher radiation field in the LMC. Significant deviations from between the HI and CII in some regions suggest that part of the CII emission comes from ionized regions. Subtracting the contribution to the CII luminosity from bright HII regions, the remaining ~40-45% of the CII luminosity could be due to diffuse ionized gas.