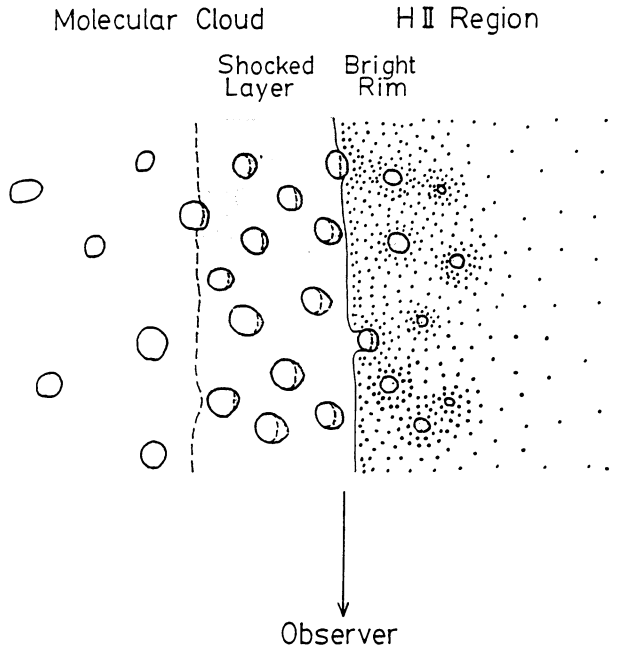

Fig. 3. A schematic representation to show the inhomogeneous or clumpy structure of the bright bar. Dashed lines represent shock fronts.

THE SUBMILLIMETRE WAVELENGTH SPECTRUM OF ORION A

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We report on the first submillimetre wavelength spectral scan of the Orion A molecular cloud in the frequency range 342-463 GHz (0.88-0.65 mm) using the Queen Mary College Submillimetre Heterodyne Receiver at UKIRT. Twenty-eight molecular transitions were detected, the majority of these for the first time. The lines include transitions of CO, CS, HCN, HCO^+, H_2CO, H_2CS, SO, SO_2, CCH, SiO and CH_3OH. Upper limits are reported for a number of lines including CO^+ and the ground state transition of NH_2. A number of the lines are surprisingly intense, and we will present maps of the relative distributions of HCO^+, HCN, H_2CO and CCH, which show striking differences in their spatial structures. We will present details of the excitation of a number of the lines based on the results from this survey.

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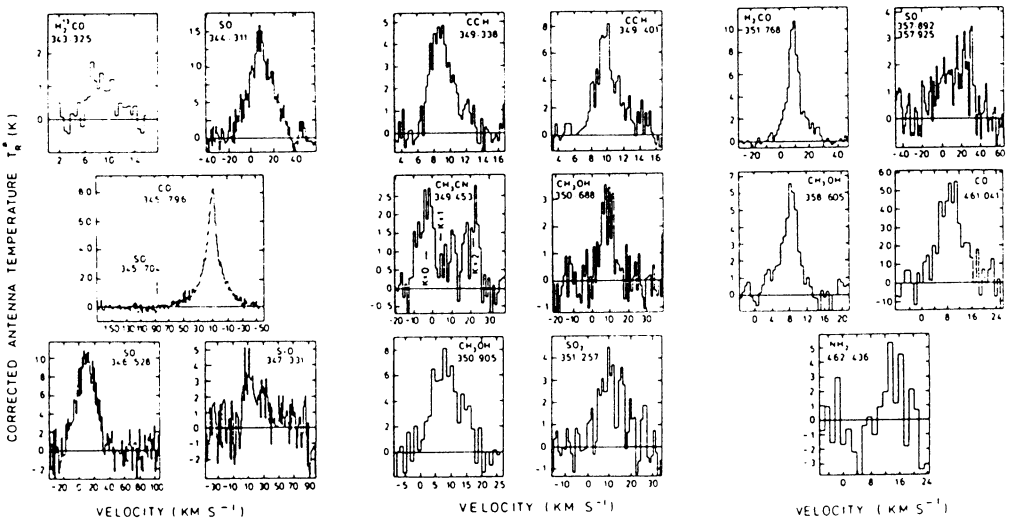

TWO DIMENSIONAL MODELS FOR THE ORION NEBULA AND M17

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We apply a 2-D, axisymmetric code for modeling H II regions (Rubin Ap.J. 287, 653, 1984) to observations of the Orion Nebula. The model solves for the ionization and thermal structure and radiative transfer for the quasi-equilibrium volume. Assuming that the Orion Nebula is viewed face-on (along the symmetry axis) and that the geometry/density distribution is plane parallel with an exponential density gradient perpendicular to the slab, we use a χ^2 minimization technique to best

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