A CONFUSION LIMITED SPECTRAL SURVEY OF ORION

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A line survey of Orion KL has been carried out with the 30m IRAM radio telescope. In addition to the central position, which was observed across the whole frequency range covered by the 30m telescope (80-280 GHz), a 2-D line survey over a region of 2'x2' has been performed between 200-282 GHz. Spectral features with intensities below 0.05 K, 0.1 K and 0.1 K in the 3mm, 2mm and 1mm ranges respectively are considered to belong to the confusion limit of the survey. More than 15000 lines have been detected above these confusion limits, of which more than 10000 have been assigned to 44 molecules and their isotopologues. A particular effort has been made in the laboratory to characterize isotopic species of abundant molecules such as CH_3CH_3CN and CH_3OCOH and their vibrationally excited states. We present the results for some abundant species and their isotopologues (SO, CS, SiS, SiO, SO_2), the status of the identifications and the possible carriers for the 5000 remaining unidentified lines.
The thousands of well defined spectral features below the confusion limits at 3 and 2 mm are also awaiting identification. Above 200 GHz these features make a "pseudocontinuum" whose assignment is hopeless. The implications for line surveys in the ALMA era will be discussed.