

A MOLECULAR SURVEY OF COMET C/1995 O1 (HALE-BOPP) AT THE IRAM TELESCOPES

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Abstract. Spectroscopic observations of comet Hale-Bopp were undertaken near perihelion at millimetre wavelengths with the Institut de Radioastronomie Millimétrique (IRAM) telescopes at Plateau de Bure (France) and Pico Veleta (Spain). They resulted in the first detections of HCOOH, SO₂, NH₂CHO and HCOOCH₃ in a comet. HDO was detected through its 3₁₂-2₂₁ line at 225.897 GHz, complementing the observation of the 1₀₁-0₀₀ line at 464.925 GHz at the James Clerk Maxwell Telescope (Meier et al., 1998, *Science* **279**, 842). Several unidentified lines are present in the spectra. Observations of HC₃N, HNCO, OCS, SO, CN, CO⁺, HCO⁺, in addition to more 'classical' species CO, HCN, HNC, CH₃CN, CH₃OH, H₂CO, CS and H₂S (Biver et al., this issue) permit us to make out an extensive inventory of the composition of the coma of comet Hale-Bopp at its perihelion. It presents strong analogies with gas-phase abundances measured in interstellar hot cores and bipolar flows, which are believed to reflect the composition of interstellar grains.

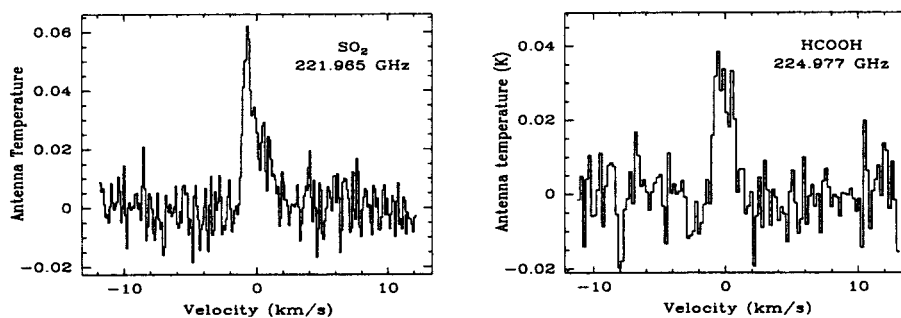


Figure 1. Detection of SO₂ (11_{1,11}-10_{0,10}) and HCOOH (blend of 10_{5,6}-9_{5,5} and 10_{5,5}-9_{5,4}) in comet Hale-Bopp at the IRAM Plateau de Bure interferometer on March 18-21 and March 20-21 1997, respectively.



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