SUBMILLIMETER SPECTROSCOPY OF ZnO ($X^1\Sigma^+$)

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The pure rotational spectrum of ZnO ($X^1\Sigma^+$) has been measured using millimeter-wave direct-absorption techniques. ZnO was produced by the reaction of zinc vapor and N_2O under d.c. discharge conditions. Over the frequency range 239-514 GHz, rotational transitions were measured for the ground and several vibrationally excited states of the five stable zinc isotopologues of ZnO. The $^1\Sigma^+$ ground state was confirmed, and the spectroscopic constants and equilibrium parameters were calculated. The bond length of zinc oxide was determined to be 1.708 Å.