VIBRATIONAL SPECTROSCOPIC DATABASE ON ACETYLENE $\tilde{X}^1\Sigma_g^+$ ($^{12}C_2H_2$, $^{12}C_2D_2$, $^{13}C_2H_2$)

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We have gathered information on the vibrational energy states in the ground electronic state of three isotopomers of acetylene ($^{12}C_2H_2$, $^{12}C_2D_2$, $^{13}C_2H_2$): spectroscopic constants (vibrational frequencies and anharmonicities, geometrical structure, vibration-rotation interaction parameters), observed vibrational energy states and complete sets of predicted vibrational energies and predicted principal rotational constants B_v for states of $^{12}C_2H_2$, $^{12}C_2D_2$ and $^{13}C_2H_2$ up to 15000, 10000 and 12000 cm^{-1} respectively. Statistical parameters (partition functions and integrated number of states) deduced from these predicted spectroscopic data are also provided for the three isotopomers.