RESONANT TWO-PHOTON DETACHMENT OF WO_2^-

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The resonant two-photon detachment spectrum of WO_2^- in the $1.75 - 2.41$ eV range exhibits at least two electronic transitions near the detachment continuum of WO_2^-. The states are assigned to valence-bound states of the anion, rather than dipole bound states, in part because the observed bending frequencies are considerably lower than those in the neutral. One band exhibits doublets, which is attributed to spin-orbit splitting in the two $E_{1/2}$ sub-states of a quartet anion state. A qualitative assignment of the spectrum is made based on comparison with the photoelectron spectrum of WO_2^-, as well as density functional theory calculations.