L_a, L_b ELECTRONIC STATE MIXING IN TRYPTAMINE. A HIGH RESOLUTION LASER STUDY.[a]

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An experimental description of the near-degenerate first two electronically excited singlet states of indole-containing molecules has historically been elusive. An identifying difference between the two energy levels is the orientation of each respective excited-state permanent dipole moment as well as the corresponding transition dipole moments. In this report, we describe high resolution electronic spectroscopy experiments on the GPyOut (A) conformer of tryptamine both in the absence and presence of an applied electric field which clearly identify regions of the spectrum in which L_a, L_b electronic state mixing occurs. The direct observation of the excited-state permanent dipole moment of these vibronically-coupled electronic transitions yields information previously only inferred from solution dynamics.

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