We have also carried out 113 OPW Prague-type and Paris-type band calculations for silicon, and published some preliminary empirically adjusted solutions [7, 8]. Unfortunately, the only well-established interband transition energy, from the experimental point of view—including the exact location in the reduced zone of the initial and final energy levels—is the indirect band gap, Δ_1^m–$\Gamma_{25'}$, as was also the case a year ago [7, 8]. (The paper by Dresselhaus and Dresselhaus [5] contains a comprehensive review of the present state of our experimental knowledge of the band structure of silicon and germanium.) In Figure 9 we show the outcome of an empirically adjusted 113 OPW Prague-type band calculation for silicon, also based on a three-parameter adjustment scheme [$\Delta v(111)$, $\Delta v(220)$, and $\Delta v(311)$]. In the present instance, the indirect band gap was set equal to its experimental value in the E^*(EXPT) scheme (Δ_1^m–$\Gamma_{25'}$ = 1.13 eV); L_1–$L_{3'}$ was set equal to our best present *estimate*, 3.4 eV; and $\Gamma_{2'}$–$\Gamma_{25'}$ was set equal to 4.05 ± 0.1 eV, which is the value quoted by Cardona, Shaklee, and Pollak [79] on the basis of their electroreflectivity measurements. (This value was obtained by following the direct band gap in the germanium–silicon alloy system from pure

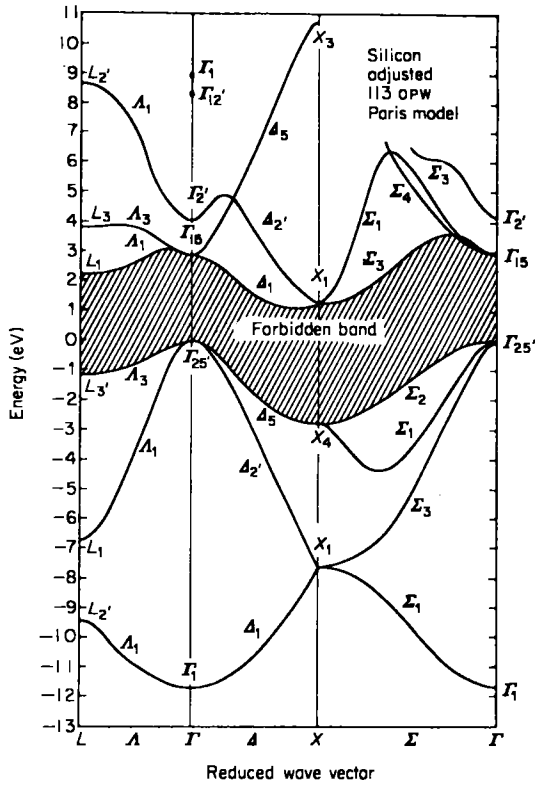

Figure 9. Energy band structure of silicon (spin–orbit splitting neglected).