The high-resolution infrared spectrum of gaseous ethane-d$_1$ at 130 K shows transitions that are split into A and E components due to the interaction of overall rotation with the internal rotation of the CH$_3$ group. An analysis of the spectrum from 680 to 900 cm$^{-1}$ with an expanded version of the program ERHAM$^a,b$ is in progress to assign the bands at E($\nu_{17}$) = 805 cm$^{-1}$ and E($\nu_{11}$) = 715 cm$^{-1}$. A discussion of the interactions among the fundamental levels of $\nu_{17}$ and $\nu_{11}$ with overtone levels of $\nu_{18}$ and the(CH$_3$ torsion) will be given. ERHAM has been and continues to be very successful in the analysis of pure the rotational spectra of molecules containing internal rotation and the vibrational spectrum of C$_2$H$_5$D serves as an excellent system to test the extension of the program.

$^b$P. Groner, J. Mol. Spectrosc. 278 52 (2012)